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almer huntley, jr. & associates
surveyors · engineers · planners
northampton, massachusetts

july 1981

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WATER POLLUTION CONTROL FACILITY PLAN

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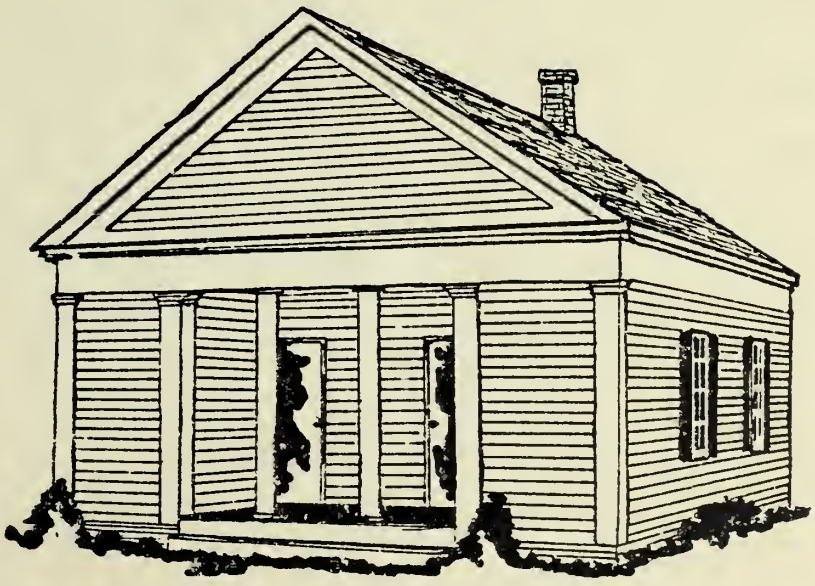


STEP I
FACILITY PLAN

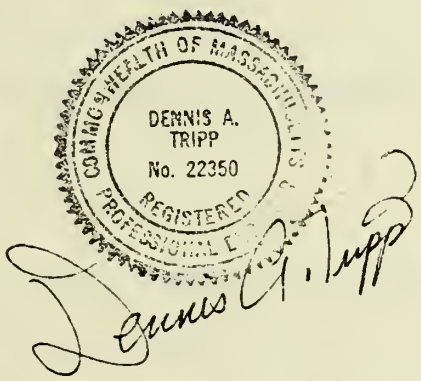
for the

TOWN OF SOUTHAMPTON, MASSACHUSETTS

PROJECT C250438-01

Board of Selectmen, Town of Southampton, Mass.

July, 1981



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LIST OF ABBREVIATIONS

BPWTT	Best Practicable Waste Treatment and Technology
CFR	Code of Federal Regulations
DUE	Dwelling Unit Equivalent
ENR (Index)	Engineering News Record (Construction Cost Index)
EPA	(Federal) Environmental Protection Agency
GPD	Gallons Per Day
GPDC	Gallons Per Day Per Capita
GPM	Gallons Per Minute
LPVRPC	Lower Pioneer Valley Regional Planning Commission
(M)DWPC	(Massachusetts) Division of Water Pollution Control
MGD	Million Gallons Per Day
NPDES	National Pollution Discharge Elimination System
O & M	Operation and Maintenance
STEP	Septic Tank Effluent Pump (Unit)
USDA-SCS	United States Department of Agriculture-Soils Conservation Service
USGS	United States Geological Survey (Topographic Map)
WWTF	Wastewater Treatment Facility

1. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

1. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Town of Southampton, Massachusetts, is a relatively small rural bedroom community with a present population of approximately 4,000. Sewage disposal throughout the Town is presently provided by individual, privately owned, on-lot subsurface disposal systems. While the Town's regulatory setup and enforcement procedures have drastically lessened the potential of sewage difficulties both in recent history and for the future, two problem areas have been identified: (1) the older Town Center area and (2) the Pequot Pond area. Both have exhibited a history of difficulties with on-lot disposal. Also, accelerated eutrophic conditions have been reported within Pequot Pond.

The Town Center is located in an area geologically unsuitable for on-lot disposal; the problem is further compounded by small lot sizes and antiquated systems. The Pequot Pond area does have suitable soil conditions. However, seasonal homes have been converted to year-round dwellings, thereby increasing the volume of wastewater entering the undersized leaching fields. Small lot sizes have prevented the installation of systems complying with modern regulations governing on-lot disposal. In both of these cases, it was initially concluded that special considerations were needed.

To alleviate the wastewater management problems identified in the preparation of this report, several alternatives were considered. Alternatives considered include: (1) regional solutions utilizing connections to existing municipal wastewater treatment facilities in neighboring communities, (2) in-town municipal treatment facilities for either or both locations, and (3) community subsurface disposal systems for either or both of the areas.

Based on the results of the Facility Plan, it is concluded that:

1. Many existing on-lot subsurface disposal systems in the Town Center and Pequot Pond areas do not function efficiently and create potential public health and odor problems.
2. The requirements of the Massachusetts Environmental Code, Title V, cannot be complied with in many cases.
3. Accelerated eutrophic conditions prevail in Pequot Pond, rendering existing on-lot disposal systems suspect.
4. Private water supplies are threatened in the Pequot Pond area due to their close proximity to existing subsurface systems.
5. The municipal ground water supply serving the Town Center would be threatened by the upstream discharge of treated community effluent to the Manhan River, a watercourse of recognized low assimilative capacity.

6. Excessive amounts of Infiltration/Inflow do not exist since there are no existing sanitary sewers.

After evaluating the economic, environmental and social costs related to the various solutions, it is recommended that:

1. A pressure sewer-leach field system be installed to service a limited area of Town Center.

2. A municipal regional solution be applied to the Ponds area which would be served by a pressure-type collection system which would transport effluent to the City of Westfield's Arm Brook Interceptor, final destination to be the existing Westfield Wastewater Treatment Facility.

2. INTRODUCTION

2. INTRODUCTION

2.1 Study Purpose and Scope

The major reasons for initiating this study have developed from a growing awareness and concern for ecological conditions within the Town of Southampton. Various and diverse pieces of legislation at all levels of government have placed an increased responsibility upon and need for cities and towns to seek modern solutions allowing them to deal with all forms of pollution control. This legislative activity has helped direct rural awareness, particularly toward the control of pollutional discharges (both liquid and solid) to groundwater. The Town of Southampton's residents recognize the fact that the subsurface disposal of wastewaters in their community is currently a source of concern that adversely affects the environmental quality of Southampton. The Town desires to correct this situation and has commissioned Almer Huntley, Jr. & Associates, Inc. of Northampton, Massachusetts to prepare this "Step I - Facility Plan" propounding the various options available to control these problems. By way of concurrence as to the need for such an investigation, the US-EPA, through the authority of the Mass. Division of Water Pollution Control, awarded the Town a Step I Facility Planning Grant on July 20, 1976.

The classic problem faced by most small communities in Western Massachusetts, with respect to liquid pollutional discharges, centers around the older and more densely settled areas within the towns. In these neighborhoods, private disposal systems were not originally constructed in accordance with any specific regulations or technology and, in many cases, the lot size restricts or prevents compliance with modern sanitary code requirements.

The Town of Southampton manifests precisely such a situation which is further compounded by unsuitable soils conditions found in some areas of Town. The Town currently relies entirely on individual, privately owned on-lot subsurface wastewater disposal systems and, although this study will involve the entire Town, two areas of particular concern have been identified.

The older and densely settled Town Center , established in the mid-1700's, has been a perpetual source of on-lot disposal problems. This area is characterized by older houses on small lots that result in closely grouped disposal systems. The soils here are not compatible with this concept, as they consist of hardpan with a seasonal high water table.

The Pequot Pond area is faced with a similar problem where closely grouped summer cottages, with initially inadequate and undersized disposal systems intended for seasonal use only, have been converted to year-round residences without enlarging the disposal systems. The soils in this area exhibit high permeabilities, and therefore can allow pollutants to leach with little difficulty into the groundwater that feeds individual water supplies and the Pond. Coliform bacteria and associated public health problems have been recorded as occurring at the Hampton Ponds State Park Beach at the south end of the Pond. Additionally, the Citizens Task Force of the 208 Areawide Wastewater Treatment Management Program of the Lower Pioneer Valley Regional Planning Commission (LPVRPC) has cited Pequot Pond as displaying accelerated eutrophic conditions.

The purpose of this Facility Plan is to determine both the present wastewater disposal needs of the Town as a whole and to ascertain the future requirements based on current needs, desires, and technology. This will be accomplished by:

1. Identification of present and future sewage disposal problems.
2. Development and evaluation of various solutions to identified problems.
3. Selection of the plan that best addresses present and future water pollution control needs.

4. Presentation of the necessary preliminary designs for that plan along with public participation response to proposed solutions.

2.2 Planning Area

The Town of Southampton is approximately 29 square miles in area and is located along Route 10 in Hampshire County, Western Massachusetts, as shown on "Figure II". It is bordered by Westhampton and Easthampton to the north, Easthampton and Holyoke to the east, Westfield to the south, and Montgomery and Huntington to the west. It is situated approximately 20 miles northwest of Springfield, Massachusetts and 100 miles west of Boston.

The planning area for this study encompasses the entire Town of Southampton and is delineated in "Figure III" along with the two identified areas of primary concern. Although these two problem areas have been previously identified and do, in fact, demonstrate the need for detailed investigation during the course of this study, it was still considered necessary to research the conditions in all areas of Southampton to determine if other neighborhoods warrant such thorough examination.

FIGURE II

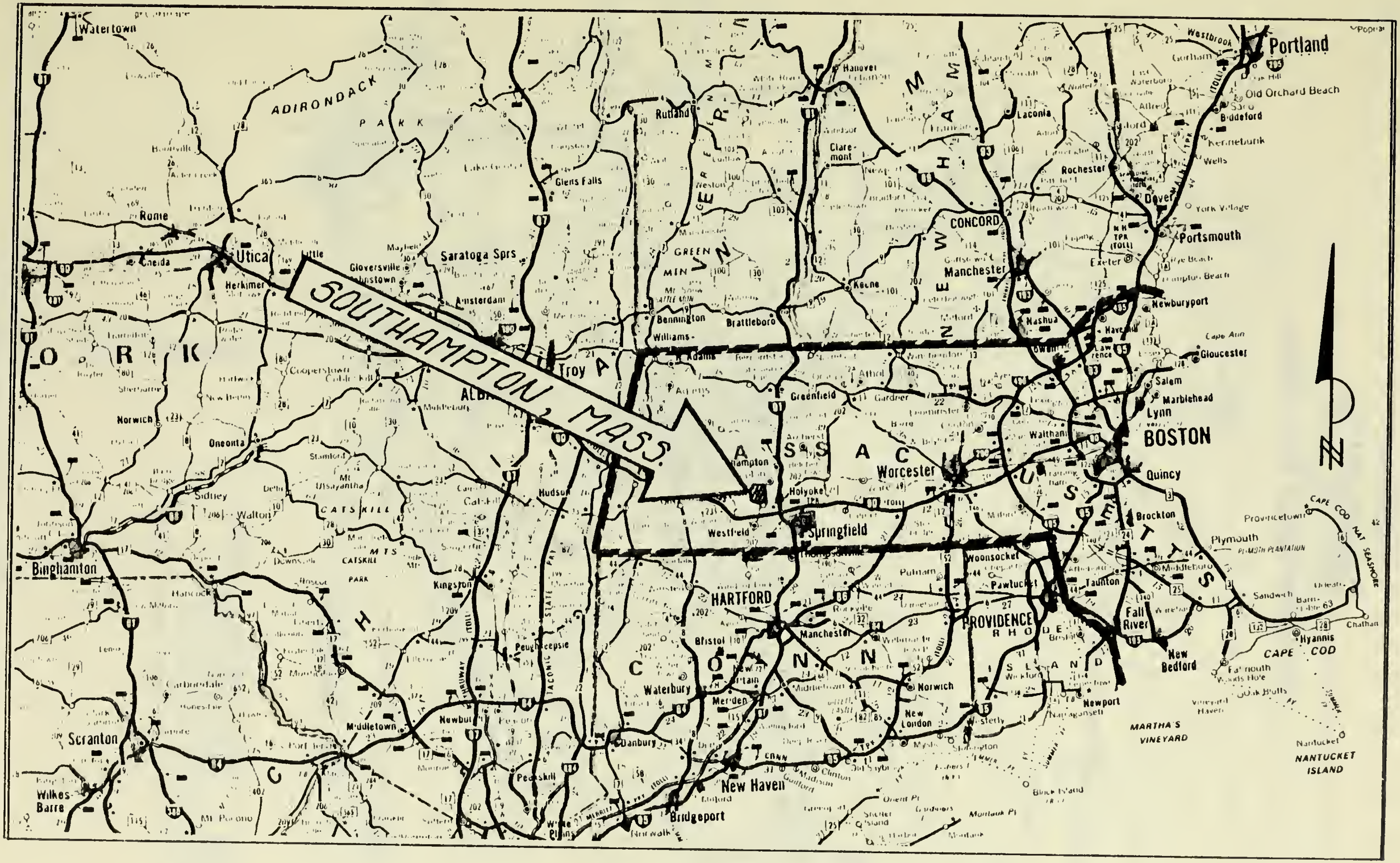

FIGURE II.
LOCATION MAP

TOWN OF SOUTHAMPTON, MASSACHUSETTS
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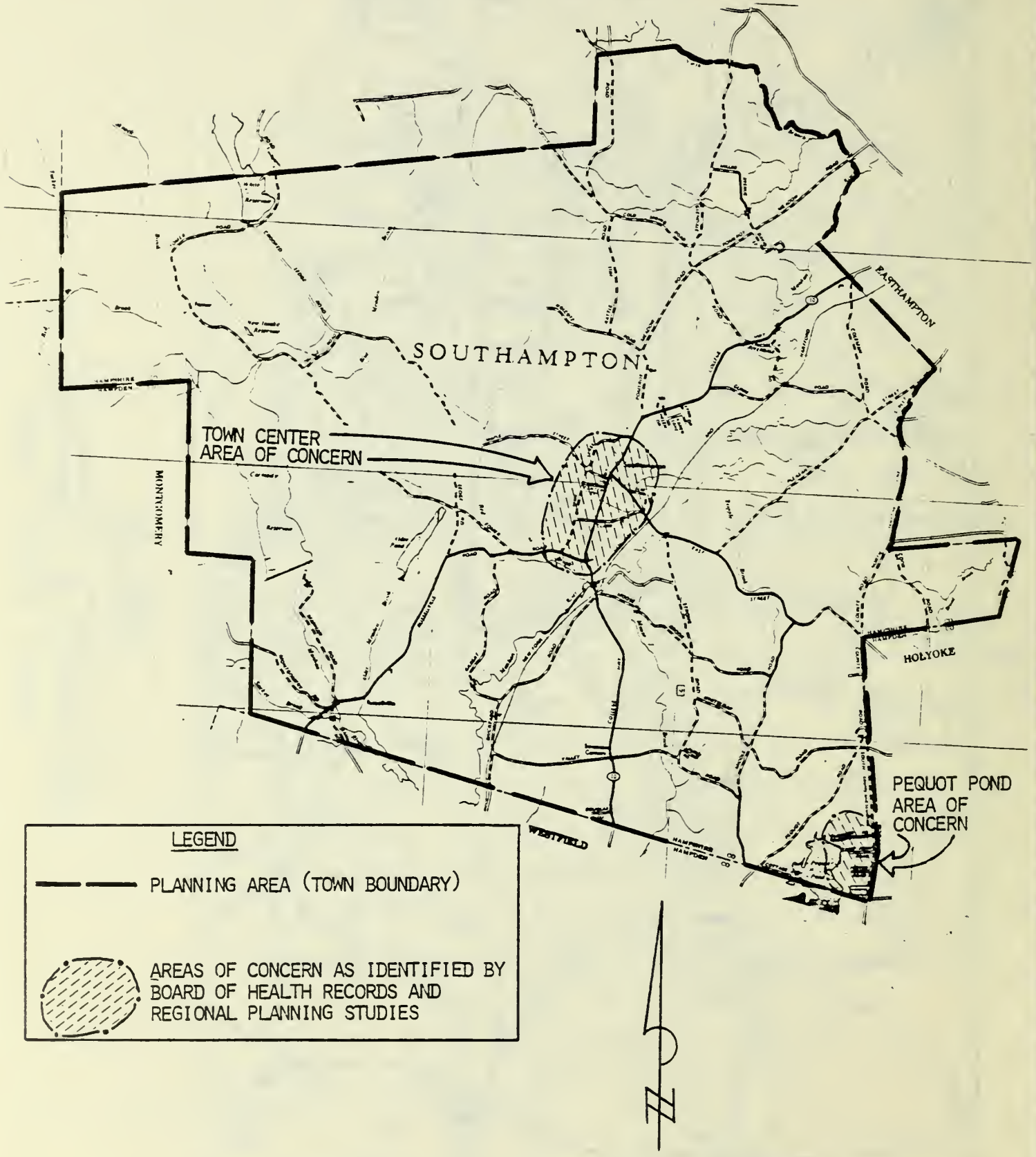
FIGURE III

PLANNING AREA MAP

STEP I FACILITY PLAN
TOWN OF SOUTHAMPTON MASSACHUSETTS



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One of the first procedures used was to analyze the existing conditions for subsurface disposal of wastewater effluent by reviewing all percolation tests done by this firm in the Town since 1971. This investigation considered the degree of success, the general subsurface conditions encountered, and the number of tests at each site. These percolation tests were analyzed in groupings such to divide the Town into specific areas where accurate predictions could be made for certain geographic areas. This test data, coupled with the empirical geological data from a 1974 study by the Soil Conservation Service (see Appendices A-1, 2, & 3), were the basis for generalized assessments of potential for various areas of the Town. These assessments rated the capacity of each area to provide satisfactory subsurface disposal for sewage. This analysis, discussed in more detail in Section 4.2 of this report, again pointed to the same two problem areas.

To support our findings concerning the two priority study areas of population concentration within the Town, additional data was obtained through a wastewater questionnaire user survey, discussed in Section 4.2 of this report.

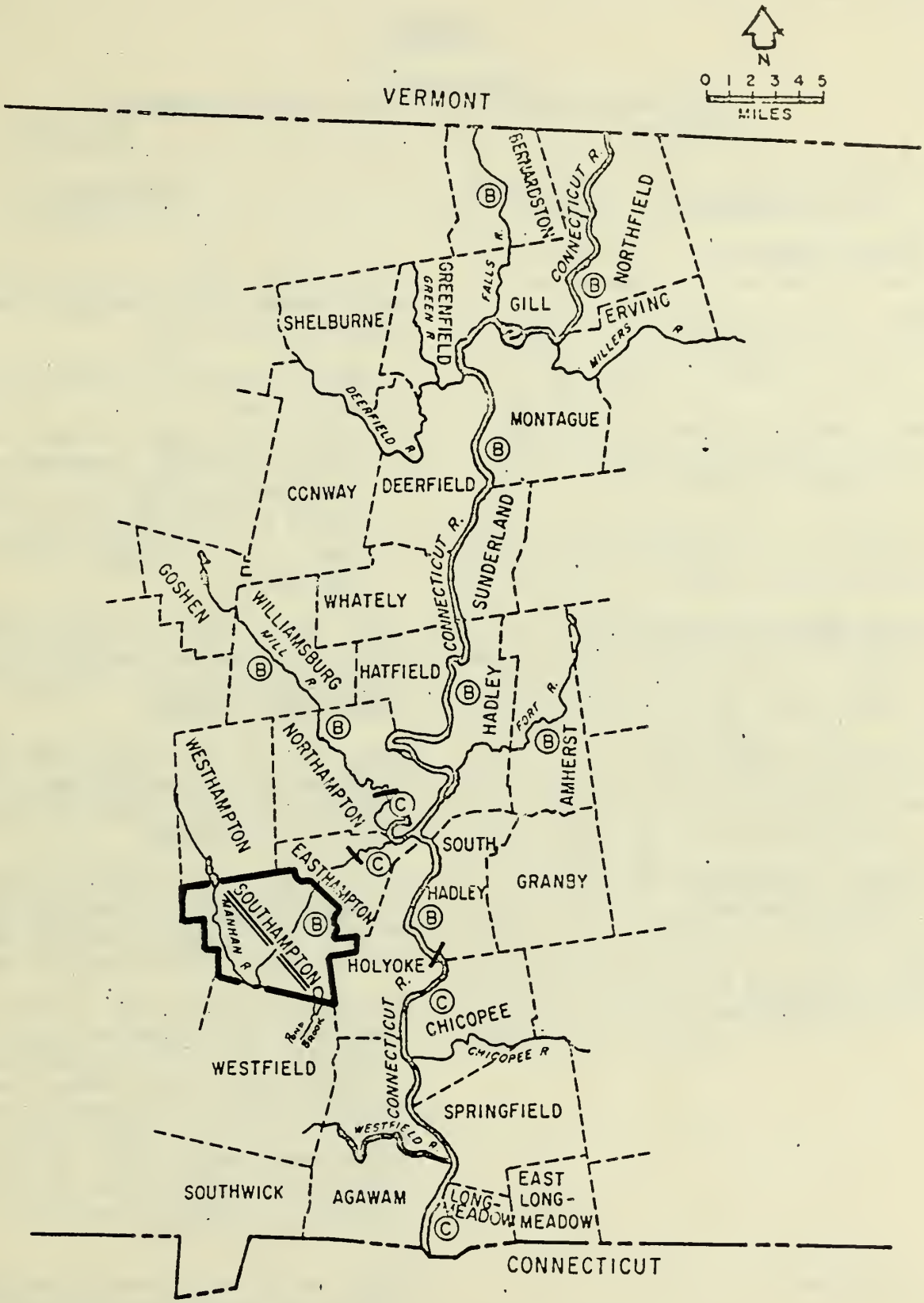
3. EFFLUENT LIMITATIONS

3. EFFLUENT LIMITATIONS

Since no municipal sewer system exists in Southampton no publicly owned point discharges exist and a permit has not been required under the National Pollutant Discharge Elimination System (NPDES). The regulation of pollutant discharges to waters in Massachusetts is the responsibility of the Massachusetts Division of Water Pollution Control (MA-DWPC), and effluent limitations established by DWPC must protect existing downstream uses and not interfere with the attainment and maintenance of beneficial uses in downstream waters.

The majority of the Town is a watershed contributory to the Manhan River; however, the smaller Pequot Pond environs drain to Pond Brook, a tributary of the Westfield River. Water segments within the planning area have been designated "Class B" by the Massachusetts Division of Water Pollution Control (MA-DWPC) per "Massachusetts Water Quality Standards", adopted September 1, 1978. (The waterway classification map is shown as Figure IV). Waters assigned to this Class are designated for the following uses: "protection and propagation of fish and other aquatic life and wildlife; and for primary and secondary recreation".

Minimum criteria are applicable to "Class B" water segments in the State of Massachusetts. Unless more stringent specific criteria are determined for an individual segment, the criteria listed in Table 1, following, are applicable. The segment of the Manhan River in Southampton is not currently designated for any more stringent restrictions than are shown in Table 1. The Manhan River does, however, exhibit a limited assimilative nature due to its low flow volume characteristics as discussed in Section 4.1.5 of this report.



Map from Commonwealth of Mass-form WPC12-IM--67-944469

COMMONWEALTH OF MASSACHUSETTS
WATER RESOURCES COMMISSION

FIGURE IV

CONNECTICUT RIVER
CLASSIFICATION

WATER USE CLASSES - (A) (B) (C) (D)

— CHANGE CLASSIFICATION

TABLE 1.

"MINIMUM CRITERIA - CLASS B WATER SEGMENTS" *

Parameter	Criteria
1. Aesthetics	All waters shall be free from pollutants in concentrations or combinations that: a) Settle to form objectionable deposits; b) Float as debris, scum or other matter to form nuisances; c) Produce objectionable odor, color, taste or turbidity; or d) Result in the dominance of nuisance species.
2. Radioactive Substances	Shall not exceed the recommended limit of the United States Environmental Protection Agency's National Drinking Water Regulations.
3. Tainting Substances	Shall not be in concentrations or combinations that produce undesirable flavors in the edible portions of aquatic organisms.
4. Color, Turbidity, Total Suspended Solids	Shall not be in concentrations or combinations that would exceed the recommended limits on the most sensitive receiving water use.
5. Oil and Grease	The water surface shall be free from floating oils, grease and petrochemicals and any concentrations or combinations in the water column or sediments that are aesthetically objectionable or deleterious to the biota are prohibited. For oil and grease of petroleum origin the maximum allowable discharge concentration is 15 mg/l.
6. Nutrients	Shall not exceed the site-specific limits necessary to control accelerated or cultural eutrophication.

* from "Massachusetts Water Quality Control Standards" September 1, 1978.

TABLE 1.

Continued

	Parameter	Criteria
7.	Other Constituents	Waters shall be free from pollutants in concentrations or combinations that a) Exceed the recommended limits on the most sensitive receiving water use; b) Injure, are toxic to, or produce adverse physiological or behavioral responses in humans or aquatic life; or c) Exceed site-specific safe exposure levels determined by bioassay using sensitive resident species.
8.	Dissolved Oxygen	Shall be a minimum of 5.0 mg/l in warm water fisheries and a minimum of 6.0 mg/l in cold water fisheries.
9.	Temperature	Shall not exceed 83°F (28.3°) in warm water fisheries or 68°F (20°C) in cold water fisheries, nor shall the rise resulting from artificial origin exceed 4.0°F (2.2°C).
10.	pH	Shall be in the range of 6.5 - 8.0 standard units and not more than 0.2 units outside of the naturally occurring range.
11.	Fecal Coliform Bacteria	Shall not exceed a log mean for a set of samples of 200 per 100 ml, nor shall more than 10% of the total samples exceed 400 per 100 ml during any monthly sampling period, except as provided in Regulation 2.1.

TABLE 1.

Continued

PART 4 ANTIDEGRADATION PROVISIONS (Apply to Manhan River Segment)

Regulation 4.1 Protection of Existing Uses. In all cases, from after the date these regulations become effective, the quality of the waters of the Commonwealth shall be maintained and protected to sustain existing beneficial uses.

Regulation 4.2 Protection of High Quality Waters. From and after the date these regulations become effective, waters designated by the Division in Regulation 5.5 whose quality is or becomes consistently higher than that quality necessary to sustain the national goal uses shall be maintained at that higher level of quality unless limited degradation is authorized by the Division. Limited degradation may be allowed by the Division as a variance from this regulation as provided in Section 4.6.

Regulation 4.3 Protection of Low Flow Waters. Certain waters will be designated by the Division in Regulation 5.5 of these standards for protection under this section due to their inability to accept pollutant discharges. New or increased discharges of pollutants to waters so designated are prohibited unless a variance is granted by the Division as provided in Regulation 4.6.

Regulation 4.4 National Resource Waters. Waters which constitute an outstanding national resource as determined by their outstanding recreational, ecological and/or aesthetic values shall be preserved. These waters shall be designated for preservation by the Division in Regulation 5.5 of these standards. Waters so designated may not be degraded and are not subject to a variance procedure. New discharges of pollutants to such waters are prohibited. Existing discharges shall be eliminated unless the discharger is able to demonstrate that:

a) Alternative means of disposal are not reasonably available or feasible; and

b) The discharge will not affect the quality of the water as a national resource.

Regulation 4.5 Control of Eutrophication. The discharge of nutrients, primarily phosphorus or nitrogen to waters of the Commonwealth will be limited or prohibited by the Division as necessary to prevent excessive eutrophication of such waters. There shall be no new or increased discharges of nutrients into lakes and ponds, or tributaries thereto. Existing discharges containing nutrients which encourage eutrophication or growth of weeds or algae shall be treated. Activities which may result in non-point discharges or nutrients shall be conducted in accordance with the best management practices reasonably determined by the Division to be necessary to preclude or minimize such discharges of nutrients.

TABLE 1.

Continued

Regulation 4.6 Variances. A variance to authorize a discharge in water designated for protection under regulation 4.2 may be allowed by the Division where the applicant demonstrates that:

1) The proposed degradation will not result in water quality less than specified for the class; and

2) The adverse economic and social impacts specifically resulting from imposition of controls more stringent than secondary treatment to maintain the higher water quality are substantial and widespread in comparison to other economic factors and are not warranted by a comparison of the economic, social and other benefits to the public resulting from maintenance of the higher quality water.

In addition to the above the applicant for a variance to authorize a discharge into waters designated for protection under Regulation 4.3 must demonstrate that:

3) Alternative means of disposal are not reasonably available or feasible.

In any proceeding where such variance is at issue, the Division shall circulate a public notice in accordance with the procedures set forth in G.L. c30A, paragraph 3. Said notice shall state that a variance is under consideration by the Division, and indicate the Director's tentative determination relative thereto. To the extent feasible, the variance proceeding shall be conducted as part of any pending discharge permit proceedings pursuant to G.L. c.21, paragraph 43. In any variance procedure, the burden of proof relative to justifying the variance shall be on the party requesting the variance. Any variance granted pursuant to this regulation shall not extend beyond the expiration date of the permit.

4. CURRENT SITUATION

4. CURRENT SITUATION

4.1 Existing Conditions in the Planning Area Without the Project

4.1.1 Planning Area Description

The planning area investigated in this report includes the entire Town of Southampton (29.58 Sq. Mi.), as delineated on the map in Figure III, "Planning Area Map", hereinbefore, and shown on U.S.G.S. Topographic Plates entitled, "Easthampton Mt. Tom, Westhampton, and Woronoco". Two areas have been designated as priority study areas in Sections 2.1 and 2.2, of this report. They are the Town Center Area and the Pequot Pond Area.

The majority of the Town is located in the Connecticut River Basin and drains via the Manhan River. A small portion in the southeastern corner of Town drains to the Westfield River via Pequot Pond and Pond Brook. The rolling topography here is characterized by moderate inclines in most populated areas (circa 200' elev., m.s.l.), interspersed with hills of 400' to 500' elevation. The topography rises quickly in the northwest with steep, rugged slopes to the 1,160' elevation at the top of Pomeroy Mountain. The soils in the east are a mixture of many types, while in the

west it is mostly rough and stony. Soils in Southampton are generally considered to be unsuitable for on-lot sewage disposal systems with 63% of the total land area designated as having "severe limitations" for such systems, per reports published by the Lower Pioneer Valley Regional Planning Commission (LPVRPC). Where soils are known to be unsuitable, large lot zoning is presently in effect under Town Zoning Ordinances.

The Town Center priority study area consists of a somewhat impervious colloidal type of soil with a seasonally high water table, the combination of which imposes severe limitations on on-site disposal facilities. The Pond area exhibits soils of a permeable nature which, while normally suitable for subsurface disposal per se, allow unrenovated contaminants to migrate through the soil to adjacent private water supplies and, potentially, to the Pond itself. As previously discussed in Sections 1 & 2.1, hereinbefore, the two areas of primary concern which have been perpetual sources of problems to the local Board of Health are the Town Center area and the Pequot Pond area.

4.1.2 Organizational Context

The Board of Selectmen in Southampton is responsible for the planning, financing, and operation of publicly orientated water pollution control programming as is evidenced by the delegation of this Facility Plan. The Board of Selectmen has the necessary legislative and administrative authorization to construct, operate and maintain a publicly owned wastewater treatment system as borne out by the Resolution of Intent found in Appendix B.

A Hampshire County community, Southampton utilizes the Town Meeting form of government and is represented by: a. 1st Mass. Congressional District; b. 8th Councilor District; c. 2nd Hampden State Senatorial District; and d. 1st Hampshire State Representative District. Southampton is within the jurisdiction of the Lower Pioneer Valley Regional Planning Commission (LPVRPC) and is cited in the report by the Citizens Task Force of the 208 Areawide Wastewater Treatment Management Program in conjunction with that agency. Additionally, the LPVRPC has developed population projections for Southampton as a part of the requirements of a Department of Housing and Urban Development (HUD) 701 Land Use Study.

Any National Pollutant Discharge Elimination System (NPDES) Permit issued in Southampton would be under the joint auspices of the U.S. Environmental Protection Agency (EPA), Region I Office (Boston, Massachusetts) and the Commonwealth of Massachusetts Water Resources Commission - Division of Water Pollution Control (MA-DWPC) in Boston (local office located in Amherst, Massachusetts). The Department of Environmental Quality Engineering (DEQE) in Boston (local office in Amherst, Massachusetts), is the State level Agency responsible for protection of the groundwaters and wetlands in Southampton.

4.1.3 Demographic and Land-Use Data

The Town of Southampton is a rural/suburban residential community located near the Springfield-Holyoke- Chicopee metropolitan area and is a part of that same Standard Metropolitan Statistical Area (SMSA). Approximately 6% of the total land area is occupied by residential, commercial, and related uses while the balance of the land is under agricultural usage or is vacant.

Southampton has little commercial or industrial activity and relies primarily on out-of-town employment opportunities. Therefore, economic conditions are influenced by the neighboring communities. Agricultural activity consists of small-scale dairy operations, an orchard, and wide-spread plots of tillage. Educational facilities consist of an elementary and a middle school in Southampton, while secondary education is shared with four other Hampshire County towns on a regional basis (Hampshire Regional School District). Any of the alternative sewerage systems for the Town Center area discussed later in this report would service the elementary school, while the Norris Middle School would be served only by the "Greater Town Center" Options ("A-1" or "A-5").

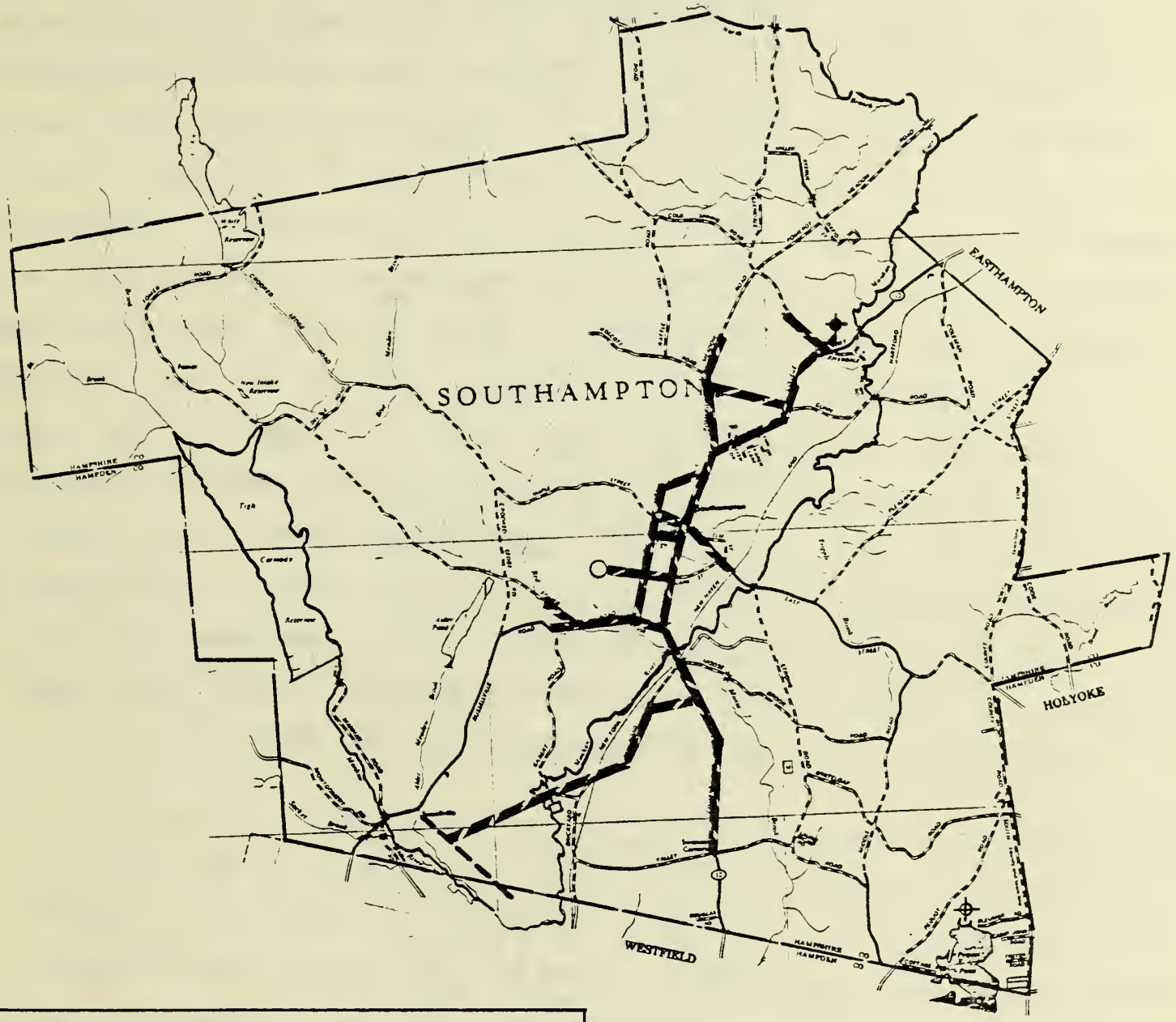
The 1975 State Census population for Southampton is 3,770. The 1970 U. S. Census showed a population of 3,069 residing in 912 housing units with a 2% vacancy rate and exhibiting a median population of 3.3 per unit. Population history and projections for Southampton were developed by LPVRPC during a HUD 701 Land Use Study and are presented and discussed in detail in Section 5.2, hereinafter.

4.1.4 Water Uses and Quality

Presently, municipal water supply is provided to the greater Town Center vicinity, along the College Highway corridor from Valley Road to the center of Town, and northerly to include all of College Highway older subdivisions

along the way. Also included are portions of Fomer Road, Brickyard Road, and Glendale Road. Figure V outlines the existing municipal water supply system. The supply inventory for this public system consists of two sources, a direct tap to one of two parallel Holyoke Water Works transmission mains that supply the neighboring City of Holyoke from the Tighe-Carmody Reservoir located in the western portion of Southampton, and a gravel developed well located adjacent to the Manhan River northwest of the intersection of College Highway with Glendale Road. This well has a Massachusetts Department of Public Health rated safe yield of 331,000 GPD, although pumping tests have established that the well is capable of producing up to 790,000 GPD. The well water and the reservoir water are not currently treated.

The Manhan River drains the Town Center watershed and a recent sampling (circa September, 1979) by the Massachusetts D.W.P.C. indicated a total coliform concentration of 1,300± mg/L, and a fecal coliform concentration of 350± mg/L. These results indicate pollutional levels in excess of the "Class B" rating (refer to Section 3 herein-before) allowable concentrations and is indicative of sewage-caused degradation. The College Highway well is located adjacent to the Manhan River, downstream from the Town Center area and, although no problems have yet been experienced, pollution of the River from the Town Center area could potentially produce detrimental effects to the quality of this potable water supply.



LEGEND

- EXISTING WATER DISTRIBUTION SYSTEM
- HOLYOKE WATER TRANSMISSION LINES
- CHLORINATION FACILITIES
- WATER STORAGE TANK
- TOWN WELL
- TOWN RESERVE WELL

FIGURE V

EXISTING MUNICIPAL WATER SUPPLY SYSTEM

SOUTHAMPTON, MASSACHUSETTS

ALMER HUNTLEY, JR., & ASSOCIATES, INC.

SURVEYORS - ENGINEERS - PLANNERS

The Pequot Pond area is served entirely by private "on-site"water supplies, a questionable practice in an area of crowded, undersized, and often obsolete individual subsurface disposal systems. One serious concern in this area is the fact that only fifty(50) percent have deep well water supply. The danger of contamination of shallow water supplies cannot be overstressed. It should be noted that most of these homes are located close to each other on relatively small building lots which will not meet the present dimensional requirements of the State Environmental Code, Title V, specifically, the size of required disposal fields and the required 100-foot separation between subsurface disposal components and wells. Data concerning the existing rates of water usage are presented in Section 4.2 hereinafter.

A tested and proven municipal well site exists at the northern end of Pequot Pond and should be considered endangered if pollution of the Pond worsens. Plans and specifications were prepared for the installation of a new municipal water supply well at this site. Financing for the construction was never obtained, and the plan has not been implemented.

4.1.5. Other Environmental Conditions

Average annual precipitation amounts to greater than 45 inches in Southampton and snow generally covers the ground from late December to mid-April. There are two (2) surface water impoundments within the Town boundaries; the larger is the Tighe-Carmody Reservoir that provides water to the City of Holyoke and is located on the Manhan River near the western town boundary. Another reservoir ("White") is located in the northwest section of Town, on the Manhan River upstream from the Tighe-Carmody site. Both reservoirs are several hundred feet higher in elevation than Southampton's residential areas and each is separated therefrom by ranges of hills. This situation precludes any possible contamination of the impoundments by the Town's wastewaters.

Any municipal sewer system within the center of Town that will employ a point-source discharge method will be limited by the low seasonal flows of the Manhan River. There are no regulated flows maintained at the Tighe-Carmody Reservoir site from which this section of the River emanates; both the LPVRPC and the MA-DWPC have concluded that there is a severely limited assimilative capability demonstrated by this segment of the River.

There is no permanent river flow gauging station located on the Manhan River in Southampton. However, the U.S. Department of the Interior did record flow data there in 1971 & 1972. This data was published in "Water Resources Data for Massachusetts, Rhode Island, Vermont and New Hampshire (1972)". These measurements were performed at the Loudville Road Bridge where the Manhan passes into Easthampton from Southampton. This point is downstream from the confluence of the North Branch with the main watercourse and, therefore, shows even higher flow rates than would be experienced at any potential municipal discharge location in Southampton's Town Center. The recorded flows are

10 - 7 - 71	18 Cubic Feet per Second (CFS)
4 - 11 - 72	154 CFS
9 - 14 - 72	25 CFS
9 - 29 - 72	18 CFS

There are no known special environmental factors such as wetlands, flood plains, unique plant or animal communities, wildlife habitats, archeological features, air quality factors, or other factors that would be significantly affected by the waste treatment alternatives addressed herein.

4.2 Existing Treatment Systems and Wastewater Flows

As mentioned in Section 2.1, the Town of Southampton presently relies solely on individual, privately owned, subsurface disposal systems. Two areas of Town have been recognized as priority problem areas due to the general substandard performance of these systems. These two areas were shown on the map in Figure III, hereinbefore, and were identified as areas of primary concern for this study by local Board of Health records and by the 208 Areawide Wastewater Treatment Management Program.

Although these two problem areas have been previously identified and do, in fact, demonstrate the need for detailed investigation during the course of this study, it was still considered necessary to research the conditions in all areas of Southampton to determine if other neighborhoods warranted such thorough examination.

One of the first procedures used was to analyze the existing conditions for subsurface disposal of wastewater effluent by reviewing all percolation tests done by this firm in the Town between 1971 and the time of the analysis. This investigation considered the degree of success, the chronology, the general subsurface conditions encountered, and the number of tests at each site (please refer to Appendix A-4, "Percolation Test Data"). These percolation tests were analyzed in groupings which served to divide the Town into specific areas where predictions could be made for certain geographic conditions. This test data,

coupled with the empirical geological data from a 1974 study by the Soil Conservation Service (see Appendix A-1, 2 & 3), was the basis for the following generalized assessment of potential for the various areas of Town to provide satisfactory subsurface disposal for sewage.

A. The western portion of Town, addressing those areas not included in the Holyoke watershed, is sparsely populated and is generally unsatisfactory to support subsurface disposal.

B. The eastern portion of Town which contains the majority of the population is generally more satisfactory to support subsurface disposal except for some localized areas. Some of those subareas appear to be:

1. The Town Center bordered by High Street, East Street, Penn Central Railroad, and Fomer Road: unsatisfactory to marginal.

2. The area along both sides of Pomeroy Meadow Road and College Highway from Pomeroy Meadow Road to Gunn Road: satisfactory.

3. An area encompassed by County Road South, the Town boundary and the electric transmission line classified as satisfactory; with the exception of the Pequot Pond area where lot size reduces the classification to unsatisfactory.

4. The Wolcott Road area off of Pomeroy Meadow Road: unsatisfactory to marginal.

5. The East Street area from the railroad tracks to Pleasant Street, including the adjacent portions of Pleasant Street: unsatisfactory to marginal, but sparsely populated and with satisfactory lot sizes.

6. The area surrounding the intersection of Valley Road and College Highway: unsatisfactory to marginal.

The general reasons for these unsatisfactory subareas are rock out crop, "tight" soils consisting of clays and hardpan, and high ground water tables.

It should be noted that the areas classified are generally those of concentrated population. In these more densely populated areas, septic tank-percolation system failures would create a health hazard, foul odors, and a general nuisance.

The remainder of the Town, those areas outside the above-described population centers, are classified as marginal to satisfactory with occasional areas that would support subsurface disposal with difficulty. These outlying areas demonstrate a high frequency of ledge, and general impermeability caused by a predominance of glacial till with very "tight" characteristics consisting of a mixture of clay, silt, sand,gravel, and boulders. Two other characteristics found in some of these areas are wet ground caused by high ground water and severe slopes. All of these factors are limitations on the use of subsurface sewage disposal.

It is generally accepted that in low density areas, such as these outlying areas, the continued use of individual subsurface disposal systems provides the most feasible and cost effective solution to disposal, even though negative soil characteristics may indicate otherwise. Permit applications for future subsurface disposal systems (both new and replacement) will require careful review in all instances because of the generally marginal soil conditions. Enforcement of Title V of the State Environmental Code through the local Board of Health, along with the retention of the existing local rules and regulations, should provide the necessary control and proper constraints. In the future, it may be necessary to adopt additional requirements, locally, in order to insure adequate subsurface disposal installations.

To support our findings concerning the two priority study areas of population concentration within the Town, additional data was obtained through a wastewater questionnaire user survey. This survey was sent at random to residences in the Town "Center" and Pequot Pond areas. The results of this questionnaire are as follows:

TABLE 2

"SUMMARY OF USER SURVEY"

TOWN CENTER

1. Average number of persons per household = 3.0.
2. All homes provided with municipal water.
3. All homes replying state that they rely on septic tanks with leachfields or drywells; 14% did not answer.
4. Approximately 60% maintained on regular schedule and have the systems cleaned periodically.
5. Approximately 80% of those responding indicate that they have had no problems with the system. Ten (10) percent experienced problems in the spring months.
6. Average age of disposal systems was 16 years with approximately 30% greater than 20 years old and 10% in excess of 40 years.

TABLE 2.

Continued

PEQUOT POND

1. Average number of persons per household = 2.5.
2. All rely on private wells for potable water.
3. All rely on septic tanks with leach fields or drywells.
4. Average interval for having systems cleaned was approximately three (3) years.
5. Approximately 90% indicated no problems with the disposal systems.
6. The average age was 14 years and some were reported to be as old as 45 years.

Several concerns were raised. Since the Pequot Pond area has already witnessed a condemnation of an existing dwelling unit due to the inability of the small lot to accept a disposal system designed in compliance with the dimensional requirements of Title V of the State Environmental Code, it is unlikely that a household experiencing problems with its system would accurately report the situation when answering this questionnaire. Many of these seasonal cottages have been converted to permanent dwellings without upsizing the septic systems and the increased wastewater volumes resulting from this trend may be adding to the already accelerated eutrophic state of the Pond.

Similar conditions prevail within the Town Center where systems are outdated and lot sizes are generally too small to construct adequately designed on-lot subsurface disposal systems that meet current regulations. The local citizenry are aware of this situation and were reticent on the subject when answering the questionaire.

Wastewater flows must be determined before any evaluation or analysis can be made of a particular sewage disposal system. The most accurate and most desirable method of doing this is to determine "per capita" sewage contributions based on potable water consumption data for the subject area being studied. While Southampton is presently undertaking a program of metering each individual service included in the existing public water system, this installation program is not complete and meter reading has not yet been instituted. Therefore, the "per dwelling" unit potable water consumption data needed for this phase of the study is based on federally mandated limits, detailed in Appendix A of 40 CFR 35. This data was then integrated with the average occupancy data obtained from the user survey to produce the present and future residential water consumption rates given in Table 3. These figures are considerably less

TABLE 3

WATER CONSUMPTION RATES - TOWN CENTER

	Present[1,4]	Future[2]	Present Per Capita[3,4]	Future Approx. Per Capita
Average Day	330	210	110	70[5]
Maximum Day	1,110	525	370	175
Peak Hour	1,700	840	570	280

1 - Gallons per dwelling unit per day.

2 - Anticipated with water meter program, conservation program.

3 - Gallons per day.

4 - Per "Southampton Water System Master Plan", Tighe & Bond, 1975.

5 - Per EPA regulations, Appendix A, 40 CFR 35.

than those developed in the Southampton Water System Master Plan prepared in 1975 by Tighe & Bond, Consulting Engineers.

Based on the above information combined with "Title V" of the State Environmental Code, Regulation 2.13, "Volume of Sanitary Sewage", Table 4 has been developed to estimate the unit wastewater volumes in Southampton which are used in the course of this study.

TABLE 4.

SEWAGE FLOW ESTIMATES

Type of Establishment	Wastewater Flow in Gallons Per Person Per Day
Single and Multiple Dwelling Units (each)	70
School, without cafeteria, gym or showers	10
School, with cafeteria, gym and showers	20
Public Park (toilet waste only)	5
Church, Meeting Hall, Etc.	3
Industrial Buildings (toilet waste only)	15
Public Buildings (per employee)	15
Restaurant (rated capacity)	10
Camp	20
Service Station (per island)	300
Dry Goods Store (per 100 S.F.)	5
Office Building (per 1,000 S.F.)	75
Snack Bar (per seat)	10

Wastewater compositions and concentrations occurring in Southampton are of a relatively simple nature. There is little industry within the Town, none that would contribute shock loadings to a municipal system. The largest industrial establishment in Town, American Buildings Company, is a warehouse facility with no process water use or industrial discharge. There is also very little commercial development; none of which would be considered a heavy wasteload contributor. Therefore, the wastewater that would prevail in any public sewerage system would be predominantly domestic. For purposes of this report, we have selected empirical waste strength loadings in accordance with the New England Interstate Water Pollution Control Commission Publication "Guides for the Design of Wastewater Treatment Works" (TR-16), Section 4.242 in establishing the organic loading criteria shown in Table 5 following.

TABLE 5

ORGANIC LOADING CRITERIA

5-day Biochemical Oxygen Demand (BOD_5)	0.20 pounds per person per day
Total Suspended Solids (TSS)	0.25 pounds per person per day

These values are applicable to communities such as Southampton which do not exhibit industrial or unusual commercial wastes.

On the basis of the flow rates determined in Tables 3 and 4, wastewater strength is thereby estimated to be:

5-Day Biochemical Oxygen Demand BOD_5: $\frac{0.20\#/p/d}{70g/p/d} \times \frac{1,000,000}{8.34\#/gal.} = 340$ mg/l

Total Suspended Solids (TSS) $\frac{0.25\#/p/d}{70\ g/p/d} \times \frac{1,000,000}{8.34\#/gal.} = 430$ mg/l

Total wastewater flows and loadings are calculated in accordance with these concentrations and are included in the discussions of each proposed treatment option in Section 6.4 of this report, and are tabulated in Table 7 of Section 5.3.

4.3 Infiltration and Inflow

According to Environmental Protection Agency (EPA) Grant Regulation 40 CFR 35.927-1, all applicants for grant assistance awarded after July 1, 1973 must demonstrate to the satisfaction of the Regional Administrator that each sewer system discharging into the treatment works project for which grant application is made is not or will not be subject to excessive infiltration/inflow. Since no sewer system presently exists and any collection system proposed and/or constructed would be subject to present-day specifications of materials and workmanship, no excessive infiltration/inflow is anticipated. Therefore, State Certification should be automatic prior to the award of a Step 2 grant.

4.4 Performance of Existing System

This evaluation compares the existing performance levels with the optimum performance obtainable with respect to the effluent quality and treatment capacity of the existing facilities.

The Town is served entirely by individual subsurface on-site disposal systems. These systems are the subject of detailed discussion in Sections 4.2 "Existing Treatment Systems and Wastewater Flows" and 5.4 "Future Environment of the Planning Area Without the Project".

These discussions demonstrate that many of the systems are obsolete,undersized, on substandard lots, of substandard design or construction, and/or in non-compatible soils. These inadequate systems are generally found in two areas of Town: Town Center and Pequot Pond.

The quality of system operation and control and the caliber of operating personnel are certainly of a lay or non-professional nature since private individual systems are involved. We can assume, however, that the homeowner is caring for his system to the greatest extent reasonably expectable, as he has a practical personal concern that the system be functional at all times and also that it not become a source of public nuisance that might lead to expensive replacement at best, or condemnation of his home at worst.

The Town Board of Health has demonstrated proper concern and competence in their application of various codes and regulations for which they are responsible, thus improvement of an administrative nature cannot be expected to better system performance to any significant degree.

This study concludes that the performance of the existing systems in the "Center" and "Ponds" could only be increased marginally without extensive system modifications and that they are currently functioning at or near the optimum levels obtainable given the nature of the existing systems.

5. FUTURE SITUATION IN THE PLANNING AREA.

(pages 42, 43 and 44 are reserved)

5. FUTURE SITUATION

Future conditions projected for the planning area are addressed in this Section of the Facility Plan as they relate to and influence forecasted flows and waste loads. The planning period upon which the preliminary designs are based considers a span of 20 years beyond the anticipated initiation of operation of the proposed treatment systems.

5.1 Land Use

The residential/agricultural land use pattern in Southampton is expected to continue unchanged for the foreseeable future. Commercial and industrial growth will likely occur only on a limited scale. No uses of this sort are anticipated which would generate any substantial volumes or concentrations of waste. The limited availability of building lots along the majority of the proposed sewerage system routes would tend to negate any major effects that a municipal sewerage system might have on future residential development. Any growth in areas along the proposed sewers should be consistent with the Town's Zoning By-Laws and the projections presented in Town Water and Zoning master plans.

5.2 Demographic and Economic Projections

Population projections were developed by the Lower Pioneer Valley Regional Planning Commission (LPVRPC) as part of the requirements for a HUD 701 Land Use Study, and were adopted by that Agency's 208 Areawide Wastewater Treatment Management Plan (Refer to Table 6, herein).

The population growth of Southampton has been slow over the years until 1950, but has increased markedly and steadily since that time. Between the years of 1950 and 1960, population increased by 58%, while an increase in population of 40% occurred from 1960 to 1970. A State Census, taken in 1975, showed a population of 3,770. Steady population increases are expected to continue in the future, as development patterns along Pomeroy Meadow Road and College Highway continue at the present rate. A direct cause of this growth can be attributed to the construction of the Massachusetts Turnpike and Interstate Route 91; since access to these transportation corridors lessens commuting time causing in-migration to occur. Table No. 6., following, presents past population data and projections; "Figure VI" presents this data in graphic form.

TABLE 6.

POPULATION DATA AND PROJECTIONS*

Southampton, Massachusetts

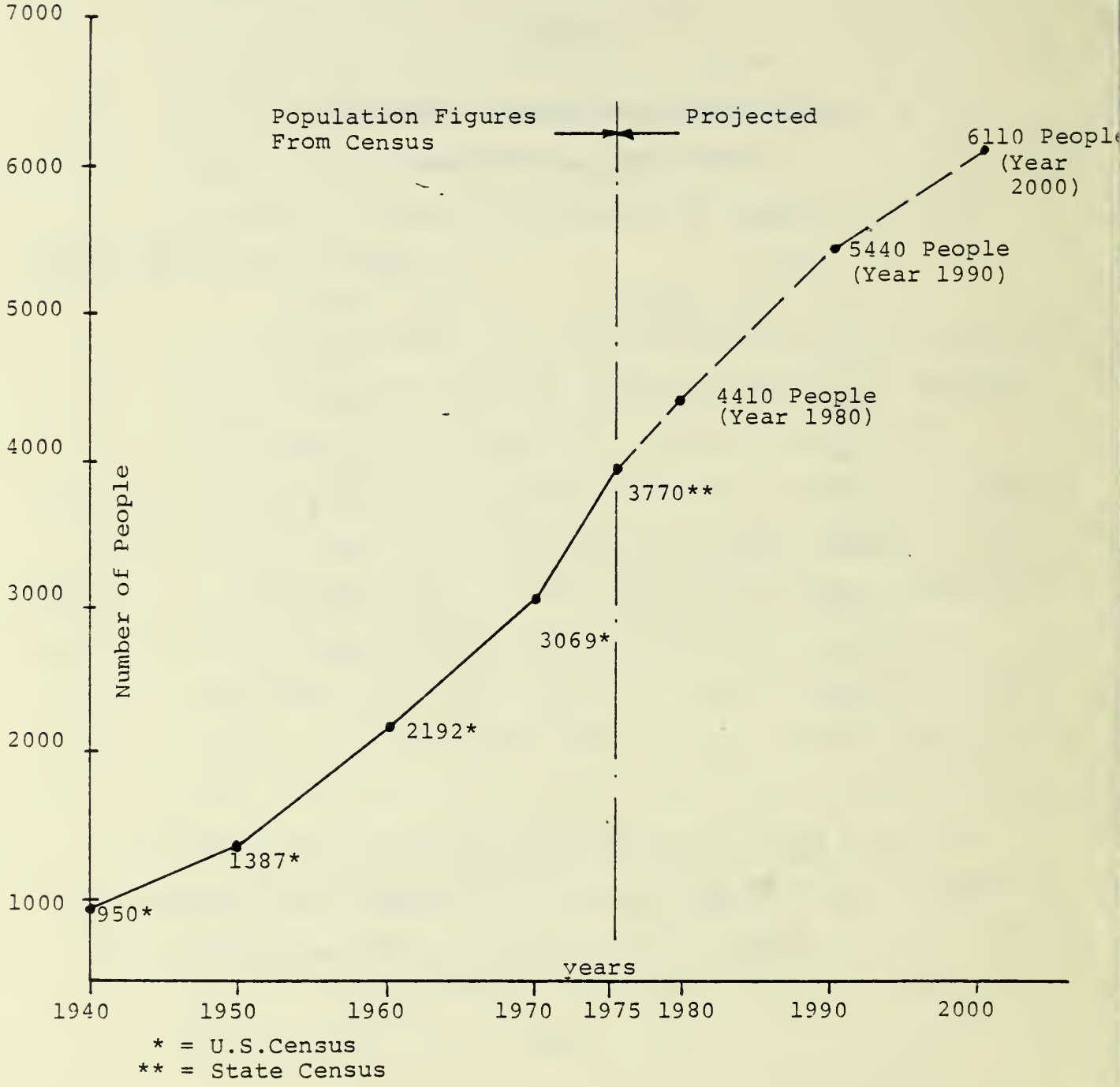
Year	Population	Households
1930 (U.S. Census)	931	
1940 "	950	
1950 "	1,387	
1960 "	2,192	
1970 "	3,069	868
1975 (State Census)	3,770	
1980 (Projected)	4,410	1,400
1990 "	5,440	1,844
2000 "	6,110	2,144

* Population Projections Developed by Lower Pioneer Valley Regional Planning Commission and adopted by 208 Areawide Wastewater Treatment Management Plan.

FIGURE VI

POPULATION PROJECTIONS

SOUTHAMPTON, MASSACHUSETTS



Note: Population projection data per LPVRPC 208 Areawide Wastewater Treatment Management Plan, per Table 6.

5.3 Forecast of Flow and Waste Loads

The anticipated present and future flows and waste loads, calculated for each solution considered in depth are included in the discussions of each individual Option, Section 6.4, herein. Average per person values for 5-day Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) utilized in these calculations are in accordance with TR-16, Section 4.242 and were discussed in Section 4.2, hereinbefore.

These projections include consideration of the following factors previously discussed herein:

a. Projections of economic and population growth; Sections 4.1.3, and 5.2.

b. Infiltration and inflow; Section 4.3.

c. Analysis of pollutant content and flows in the existing systems; Sections 4.2 and 4.4.

d. Industrial sources; Sections 4.1.3, 4.2 and 5.1.

e. Projected flow reduction (water meter installation program); Section 4.2.

There are presently no industrial discharges; and no commercial or industrial development which would contribute significant volumes of wastewater is anticipated. The parcel of industrially-zoned land adjacent to the Town Center is currently vacant, except for the "American Building Company" which has no process water use. A slow growth in occupancy of the remainder of that land in the future is anticipated due to low demand for this type of land-use in the Southampton vicinity. In any case, no "wet" industries are anticipated in the future of this parcel.

Phasing of recommended construction programs does not appear to offer any significant benefit, due to both the modest scale of the proposed systems and to the fact that any portion of either priority area left uncorrected initially would continue to pollute the adjacent surface water.

Pequot Pond exhibits public health hazards and accelerated eutrophication, while the Manhan River is a "Class B" water segment of low assimilative capacity. Therefore, a delay in any portion of the program implementation would allow further environmental degradation.

5.4 Future Environment of Planning Area Without Project

Public health and odor problems will continue to occur in the planning area if the "no project" alternative is chosen.

The currently recognized eutrophic condition of Pequot Pond (Sections 2.1 & 4.1.4 herein), will continue to accelerate. The converted summer homes, densely clustered at the Pond's edge, will likely suffer contamination of the individual on-site water supplies as the outdated and undersized existing on-lot septic systems continue to be overloaded, with the occasional condemnation of dwellings as a distinct consequence.

The Town Center on-lot systems will continue to threaten the Manhan River, a high quality stream of low assimilative capacity, which passes adjacent to the Town's groundwater supply. As these closely grouped, generally substandard and outmoded systems age, it is logical to foresee both pollutional problems at this municipal water source and the initiation of dwelling condemnation proceedings in the Town Center area due to failing and uncorrectable on-site systems.

The two surface water impoundments in Southampton which provide water to the City of Holyoke would not be affected by a "no project" option, due to geographic and hydrologic separation from the problem sources, as described in Section 4.1.5, hereinbefore.

6. ALTERNATIVES

6. ALTERNATIVES

6.1 Baseline: Optimum Operation of Existing Facilities

The existing waste water disposal facilities in Southampton consist entirely of individual on-lot subsurface disposal systems. As previously discussed herein (Section 4), many of these systems were not constructed in accordance with modern standards and/or were never intended for the current year-round usage.

Information resultant from the user survey (Section 4.2, hereinbefore), demonstrates an existing frequency of routine system maintenance that can be considered normal in a residential community. It would be reasonable to expect that significant long-term gains in town-wide system efficiency would ensue following either a user education program or a maintenance enforcement program. However, since physical, rather than operational, characteristics of the system are the root of the problems, it can therefore be concluded that the present situation closely represents the optimum level of operation efficiency that can be attained by the existing facilities.

6.2 Regional Solutions

The Town of Southampton is located between the Town of Easthampton to the north, and the City of Westfield to the south. Each of these two adjacent communities presently has available, or is involved in the planning of major interceptor sewers terminating near the Southampton town boundary and sized during design with reserve capacity to transport wastewater from areas in Southampton to each respective municipal Waste Water Treatment Facility (W.W.T.F.). Correspondence with each of these communities (Westfield and Easthampton) confirms their willingness to enter into negotiations with Southampton regarding joint regional solutions.

The Southampton Town Center area is approximately 20,000 feet (4 miles) from the existing Hannum Brook Interceptor terminus near the intersection of Pomeroy Meadow Road and Loudville Road in Easthampton. The Pequot Pond area lies approximately 10,000 feet (2 miles) from the end point of the Arm Brook Interceptor in Westfield (presently under construction).

The regional concept is discussed generally in the following two subsections and is analyzed further in Section 6.4.

6.2.1. Town Center - Regional Solutions

Options "A-1" and "A-5", diagrammed and evaluated in Section 6.4 hereinafter, would serve portions of Pomeroy Meadow Road, College Highway (Route 10), Gunn Road, and Mountain View Circle along with the Town Center. These solutions would provide service to the residential concentration north of the Town Center including the Norris Middle School, several large multi-unit residential buildings, a few small commercial structures, and a significant number of homes. A substantial length of Pomeroy Meadow Road (approximately 2 miles),zoned for residential development, would also be served by gravity sewerage as the wastewater is transported to the Easthampton interceptor terminus.

No unforeseen growth would result from either of these installations, as Town planning policies and existing zoning by-laws provide for the continued residential development of the remaining land in these areas.

6.2.2. Pequot Pond Area - Regional Solution

Pequot Pond is a single geographical locality, divided politically by the Southampton/Westfield boundary, with approximately 40% of the Pond's surface area lying in Southampton. Since the local pollutional problems, described previously, are common to the area homes in both jurisdictions and since the Arm Brook Interceptor is designed to accommodate the waste loads of the entire Pequot Pond District, a joint Southampton/Westfield solution on a regional basis is indicated. This solution is diagrammed and evaluated from Southampton's standpoint in Section 6.4 as Options "B-1" and "B-2". These Options form the basis for such an overall solution to inter-municipal sewage disposal; Westfield would only have to establish local collection systems which connect into the proposed project.

The land use pattern in Southampton and Westfield would not be significantly altered by this extension of the interceptor. The land influenced in Southampton is a relatively small area and is currently zoned "R-V" (Residential Village; 30,000 square foot minimum lot area), the densest residential usage allowable under Town Zoning Ordinances.

This "R-V" designation demonstrates a planning intent which is compatible with interceptor extension. The area in Westfield along this sewerage extension is a combination of existing residential uses, and existing and proposed business uses. The adjacent industrially-zoned land will be served by the Arm Brook Interceptor.

6.3 Alternative Wastewater Treatment Systems

The Best Practicable Waste Treatment Technology (BPWTT) management techniques considered herein will be addressed in this Section and include:

1. Biological treatment with discharge to receiving waters.
2. Treatment and reuse.
3. Land application.
4. Subsurface treatment and disposal.

Consideration was also given to a "no action" plan which would do nothing to alleviate the current problems. Pequot Pond would continue to eutrophy and perhaps lose its recreational status permanently, while individual wells in that area would become unusable due to unrenovated septic effluent infiltration into the ground water. More homes would have to be condemned, due to failing individual subsurface disposal systems on lots too small to construct new systems in compliance with modern regulations. The Town Center would suffer

an increase in the existing public health and odor problems and, here too, homes with failing systems on substandard lots would have to be condemned. The fecal coliform counts in the adjacent Manhan River, a stream of recognized low assimilative capacity, could continue to rise to a point at which regulatory agencies would insist that the problems be identified and remedied.

Best Practicable Waste Treatment Technology (BPWTT)

1. Treatment and Discharge to Receiving Waters

This technique is applicable to the Town Center only and is discussed further in Sections 6.4.0 and 6.4.2, Option A-2. The discharge of treated wastewater into lakes or ponds is not practiced in Massachusetts. Therefore, this is not a feasible solution for the Pequot Pond Study Area.

2. Treatment and Reuse

Treatment and reuse was considered, but eliminated as a practical solution due to the high relative cost of treatment and distribution, particularly in this area which exhibits no shortage of available water supply and receives an annual average precipitation of 45 inches.

3. Land Application

Land application facilities would require holding lagoons capable of retaining several months of flow during the winter. Land requirements for this alternative would be considered excessive to serve either of these small population centers. It would be difficult, due to topographical restraints, to choose a lagoon site near the Pond or the Town Center which would not be objectionably close to the residential neighborhoods. There are no large areas of non food chain acreage conveniently near either location.

4. Subsurface Treatment and Disposal

This treatment method is considered for both the Town Center area and the Pequot Pond area in Section 6.4. For several subsurface options the flows to such facility(ies) would be in excess of 15,000 GPD and would, in accordance with State and Federal policies, require treatment works commensurate with the protection of gradient groundwater usage prior to the subsurface disposal. A comprehensive investigation of subsurface site conditions, including geo-hydrological pilot testing and monitoring, is also required during the final site selection process for an over 15,000 GPD flow with subsurface disposal.

6.4 Evaluation of Options

6.4.0. Introductory Discussion

The most feasible Options for the two problem areas have been selected from both regional and alternative methods. Each Option is presented in this Section together with individual discussions pertaining to the required facilities, their locations, environmental effects, and cost effectiveness.

It has been substantiated, hereinbefore, that the outlying portions of the Town can continue to relv on individual subsurface disposal systems. These outlying sections generally exhibit scattered population, residing on relatively large sized lots where successful individual systems can be installed. The Board of Health's continued enforcement of "State Environmental Code - Title V" regulations, along with attendant local rules and regulations, should provide the necessary control and proper constraints to assure the adequacy of future installation or repair applications in these outlying areas.

Irreconcilable problems with existing "on-lot" septic systems have historically been concentrated in the two priority study areas.

The following Options present solutions to specific problems facing these two priority areas of population concentration as defined in Sections 2.2 and 4.2 of this report, the Town Center area and the Pequot Pond area.

Each Option is presented in a format intended to simplify comparison and evaluation of the various schemes, i.e.:

- A Map showing the specific area(s) of service and location of treatment facilities or regional interceptor connection;
- A General Discussion of the system with descriptions of the design, service area, and particulars of the design;
- A Design Criteria Table listing present and future contributors with quantitative flow and waste load determinations;
- A Cost Evaluation Table with an itemized cost breakdown indexed to the March 5, 1981 "ENR (Engineering News Record) Construction Cost Index" for ease in future dollar computations;

- An Advantages discussion weighing the positive aspects of that solution;
- A Disadvantages discussion, specific to that Option.

A number of issues common to more than one Option are examined in the following paragraphs of this Introductory Discussion, to avoid repetition in the separate evaluations.

Various types of sewage collection and treatment are evaluated for each of the two priority areas. Different types of design schemes (i.e.: pressure vs. gravity) allow somewhat different areas of service due to physical and design constraints. This results in a varying number of users from one Option to the next. The "problem" users are served by every Option, but in many schemes, proper design practice dictates that service effectively be provided to other users in the area due to their proximity to proposed sewers. In all cases, these additional users are those who are scheduled to be sewered during the design life of this project according to projections in both the Town Water and Zoning master plans and hence do not exemplify unplanned expansion. The extent

of service provided is reflected in the title for each Option (i.e.: Town Center, Town Center Expanded, or, Greater Town Center) and is described in each Option's general discussion.

In order to fairly evaluate the costs for each Option, one must consider the extent of coverage; therefore, the concept of "Cost per Dwelling Unit Equivalent Served" has been introduced in discussions of cost-effectiveness. This concept considers the initial (present) number of users who would support the proposed system.

Another item in the cost analysis addresses the one-time cost that the Town of Southampton would pay to Easthampton or Westfield to underwrite a fair share of the construction costs for the existing municipal Wastewater Treatment Facilities.

This is an estimate of the figure that would be determined in an agreement reached between Southampton and the respective neighboring municipality. This dollar amount would represent Southampton's fair (flow proportional) share of the local cost that was paid by the neighboring community for the construction of the existing WWTF. Preliminar discussions with Easthampton and Westfield have established that sufficient capacity is designed into their existing transport and treatment facilities to handle the Southampton flows.

The regional solutions for the Town Center area depict an interceptor along Pomeroy Meadow Road to Easthampton's Hannum Brook Interceptor. An alternate route along the Manhan River was considered during the preparation of this report, but was not found to be advantageous due to a combination of soil, topography, historical, and environmental considerations. The soils are saturated clays and hardpan, while topographically, the ground does not rise enough to cover a minimal slope interceptor at all points along the "flat land" river route. Environmentally, the river route would pass through lands preserved by the Massachusetts Wetland Protection Act. A historic canal, portions of which have been restored, traverses the area and would require special considerations.

The regional solutions for Town Center allow for future connections from the adjacent regions of Southampton which were found to exhibit marginal subsurface disposal suitability. These areas are defined in Sections 2.2 and 4.2, hereinbefore.

The regional solutions for the Pequot Pond area have capacity to accept the waste water from the adjacent neighborhood in Westfield, as is discussed in those Options.

Operation and Maintenance (O & M) equipment and personnel could be shared between the Town Center and Pequot Pond project areas, particularly if similar modes of collection or treatment are chosen for the two areas. A State Certified Operator would be required, at least part-time, to manage the local treatment facilities described in Options A-2, A-3, A-4 and B-3. This person could be shared between the two project areas and/or with other municipal departments.

Subsurface disposal of treated effluent is considered in several Options. Such disposal of flows in excess of 15,000 Gallons per Day requires special design considerations under current regulations, including: sophisticated treatment of wastewaters (as opposed to community septic tanks), a

licensed Wastewater Treatment Facility Operator, a permit authorizing "discharge" to ground water, and a thorough study of subsurface conditions. An extensive and costly geo-hydrological pilot study of the disposal site is required prior to designing such disposal facilities. An extension of the Step I Grant would be necessary to undertake a pilot study of this nature if one of those solutions is chosen.

6.4.1 Option "A-1", Greater Town Center-Regional Solution

This Option would develop a publicly owned gravity flow sanitary sewer system to service the Town Center as well as those portions of College Highway, Mountain View Circle, Gunn Road, and Pomeroy Meadow Road (including the Norris Middle School) which form the residential concentration north of Town Center.

The Town Center area wastewater would be collected by gravity to a lift station on College Highway at Potash Brook which would pump via a force main to the proposed Pomeroy Meadow Road gravity interceptor. This interceptor would flow by gravity along Pomeroy Meadow Road to the Town boundary where it would enter Easthampton's existing Hannum Brook Interceptor for treatment at the Easthampton WWTF. Schematic profiles for the trunk sewer along College Highway at Town Center and for the Pomeroy Meadow Road interceptor are presented at the end of this Section in the Miscellaneous Design Data for Option A-1.

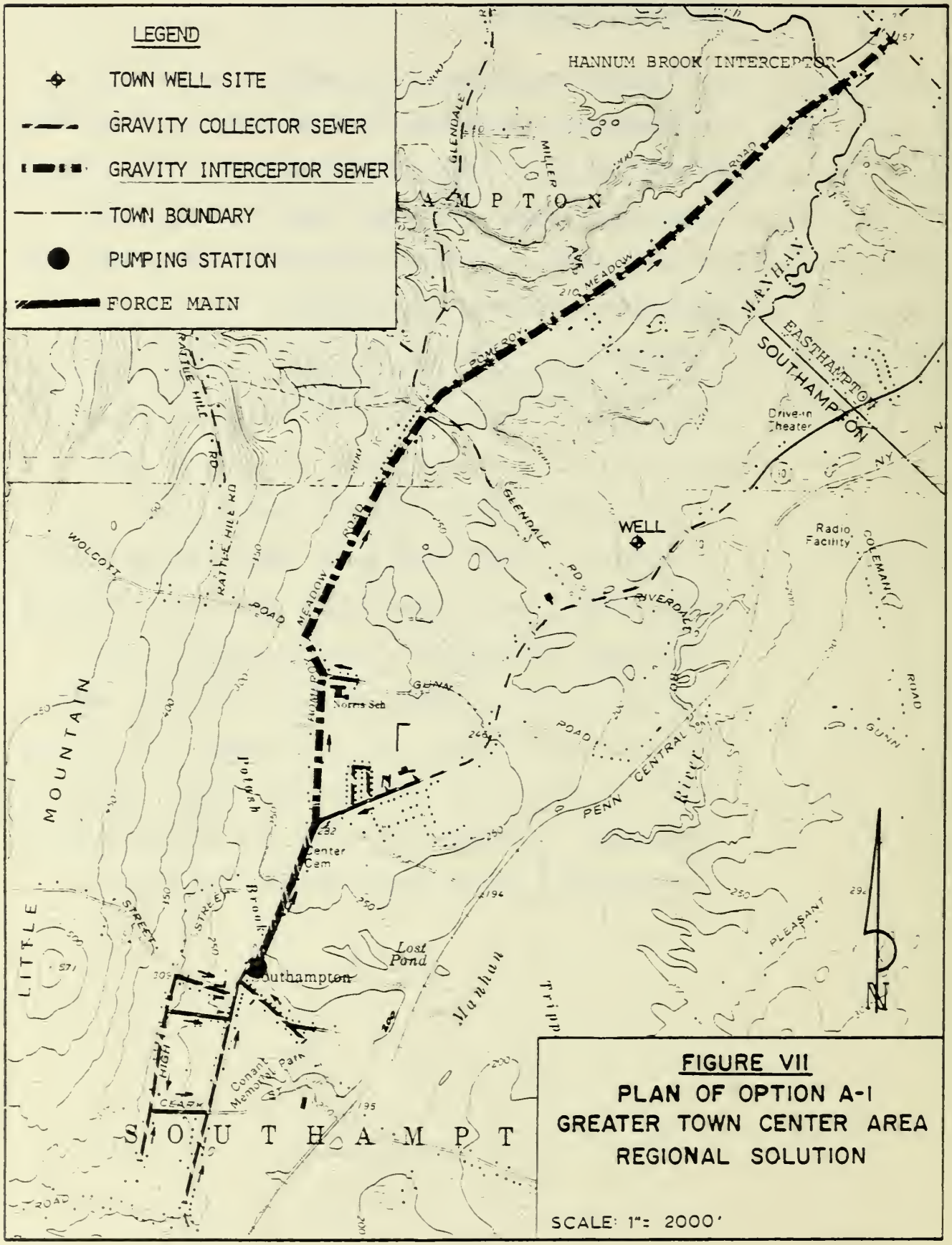


FIGURE VII
PLAN OF OPTION A-1
GREATER TOWN CENTER AREA
REGIONAL SOLUTION

SCALE: 1"= 2000'

TABLE 8

DESIGN CRITERIA - OPTION "A-1"

GREATER TOWN CENTER - REGIONAL SOLUTION

PART 1. Town Center Collector System

	SOURCE	AVG. FLOW (GPD)
A.		
1.	Town Hall 6 persons @ 15 gal/person/day	90
2.	Town Hall Assembly 50 persons @ 3 gal/person/day	150
3.	Library 7 persons @ 15 gal/person/day	105
4.	Fire Station 3 persons @ 15 gal/person/day	45
5.	School (center) 265 persons @ 10 gal/person/day	2,650
6.	Church 140 persons @ 3 gal/person/day	420
7.	Grange 80 persons @ 3 gal/person/day	240
8.	Conant Park 100 persons @ 5 gal/person/day	500
9.	Eighty-Three (83) Homes (83 x 3.0 = 249 persons) 249 persons @ 70 gal/person/day	17,430
	Town Center Portion - PRESENT TOTAL	21,630
10.	Future - 20 Additional Homes 20 x 3.0 x 70 gal/person/day	4,200
	Town Center Portion - FUTURE TOTAL	25,830

B. Peak Flows
1. Peak Flows - Present: (3.0 x Average) = 64,890 GPD (45 GPM)
2. Peak Flows - Future : (3.0 x Average) = 77,490 GPD (55 GPM)

C. Organic Considerations

1.	BOD_5 (Present): .022 @ 340 mg/l	=	62 #/day
2.	BOD_5 (Future) : .025 @ 340 mg/l	=	70 #/day
3.	TSS (Present): .022 @ 430 mg/l	=	79 #/day
4.	TSS (Future) : .025 @ 430 mg/l	=	90 #/day

(continued)

TABLE 8 (continued)

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present)	96 D.U.E.
2. Equivalent Dwelling Units Served (Future)	116 D.U.E.

PART II. Total Option A-1 Flows & Loadings

A.	SOURCE	AVG. FLOW (GPD)
1.	Flow from Town Center (previous page)	21,630
2.	Norris Middle School 375 persons @ 20 gal/person/day	7,500
3.	Red Basket 250 persons @ 10 gal/person/day	2,500
4.	Post Office 3 persons @ 15 gal/person/day	45
5.	Service Station 1 island @ 300 gal/island/day	300
6.	Store Complex (Route 10 and Pomeroy): Restaurant - 40 seats @ 10 gal/person/day 1500 s.f. Store @ 5 gal/100 sf/day	400 75
7.	Super Market Complex: Gullivers Restaurant - 77 seats @ 10 gal/person/day Super Market & Aqua Nook - 20,000 sf @ 5 gal/100/sf/day Bank - 5000 sf @ 75 gal/1000 sf/day	770 1,000 375
8.	County Road Apartments 60 Apartments x 3.0 x 70	12,600
9.	Homes on Pomeroy Meadow Road 85 Homes x 3.0 x 70	17,850
10.	Hampton South Condominiums 24 units x 3.0 x 70	5,040
11.	College Highway Area 40 Homes x 3.0 x 70	8,400
	Total Option A-1 PRESENT TOTAL	78,485 GPD

(continued)

TABLE 8 (continued)

SOURCES	AVG. FLOW (GPD)
12. Future Development:	
20 Homes - Center Area	
+ 329 Homes - Route 10 and Pomeroy Meadow Road	
= 349 Homes x 3.0 x 70	73,290
Total Option A-1 FUTURE TOTAL	151,775 (GPD)

TOTAL OPTION A-1:

B. Peak Flows
1. Peak Flows - Present: (3.0 x Average)= 235,455 (165 GPM)
2. Peak Flows - Future : (3.0 x Average)= 455,325 (315 GPM)

C. Organic Considerations

1. BOD_5 (Present): .078 @ 340 mg/l	220	#/day
2. BOD_5 (Future) : .152 @ 340 mg/l	430	#/day
3. TSS (Present): .078 @ 430 mg/l	280	#/day
4. TSS (Future) : .152 @ 430 mg/l	545	#/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present)	348 D.U.E.
2. Equivalent Dwelling Units Served (Future)	638 D.U.E.

TABLE 9

COST EVALUATION

OPTION "A-1", GREATER TOWN CENTER, REGIONAL SOLUTION

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ Yr. 20	REMARKS
GRAVITY MAINS:						
11,000 LF	12" @ 0-15'	$50	$ 550,000	50 Yrs.	$ 330,000	Pomerov Meadow Rd. Interceptor
5,000 LF	12" @ 15-25'	$65	$ 325,000	50 Yrs.	$ 195,000	Pomeroy Meadow Rd. Interceptor
1,500 LF	8" @ 12-25'	$50	$ 75,000	50 Yrs.	$ 45,000	Town Center
8,700 LF	8" @ 0-12'	$35	$ 304,500	50 Yrs.	$ 182,700	Town Center
4,100 LF	8" @ 0-12'	$35	$ 143,500	50 Yrs.	$ 86,100	North Town Center
FORCE MAIN:						
2,300 LF	6" @ 5-8'	$20	$ 46,000	50 Yrs.	$ 27,600	Sized for future areas, not in roadway
1 EA	60 gpm Pump Sta.	$--	$ 110,000	20 Yrs.	$ 0	Includes standby electric generator
90 EA	Abandon Septic Tanks	$200	$ 18,000	50 Yrs.	$ 11,000	
TOTAL CONSTRUCTION COST:			$1,570,000			
RESIDUAL VALUE AT YEAR 20:					$ 877,000	
SITES & EASEMENTS:			$ 5,000		5,000	1 pump station site
COST SHARE OF EHAMP.WWTF:			$ 100,000		0	Estimated Cost
CONTINGENCIES:			$ 157,000		$ 94,000	10% of Construction Cost
ENGINEERING: (design & construct)			$ 210,000		$ 126,000	
TOTAL CAPITAL COST:			$ 2,040,000		$1,100,000	
ANNUAL O & M COST:			$ 25,000			
PRESENT WORTH	PER PRESENT D.U.E.		$ 5,800			
PRESENT WORTH	PER FUTURE D.U.E.		$ 3,180			
PRESENT WORTH (20yr., 7-1/8%)			$2,027,000			

All costs in this table based on Mar. 5, 1981 ENR Const.Cost Index= 3,388

ADVANTAGES OF OPTION "A-1"

There are several advantages to this Option. Firstly, it would provide a permanent solution to the wastewater disposal problems within the Town "Center" including the primary school and all municipal buildings. Secondly, the area of service would be increased to include the only remaining areas of significant population density within this watershed to include the Norris Middle School. This school, which currently relies on subsurface disposal of all wastewater, is responsible for food preparation for the entire public school system. This option would utilize the existing Easthampton Wastewater Treatment Facility (WWTF), thereby both eliminating the need and costs for such an installation in Southampton, and eliminating any possible threat to the integrity of the College Highway municipal well which could possibly result from any local treatment option.

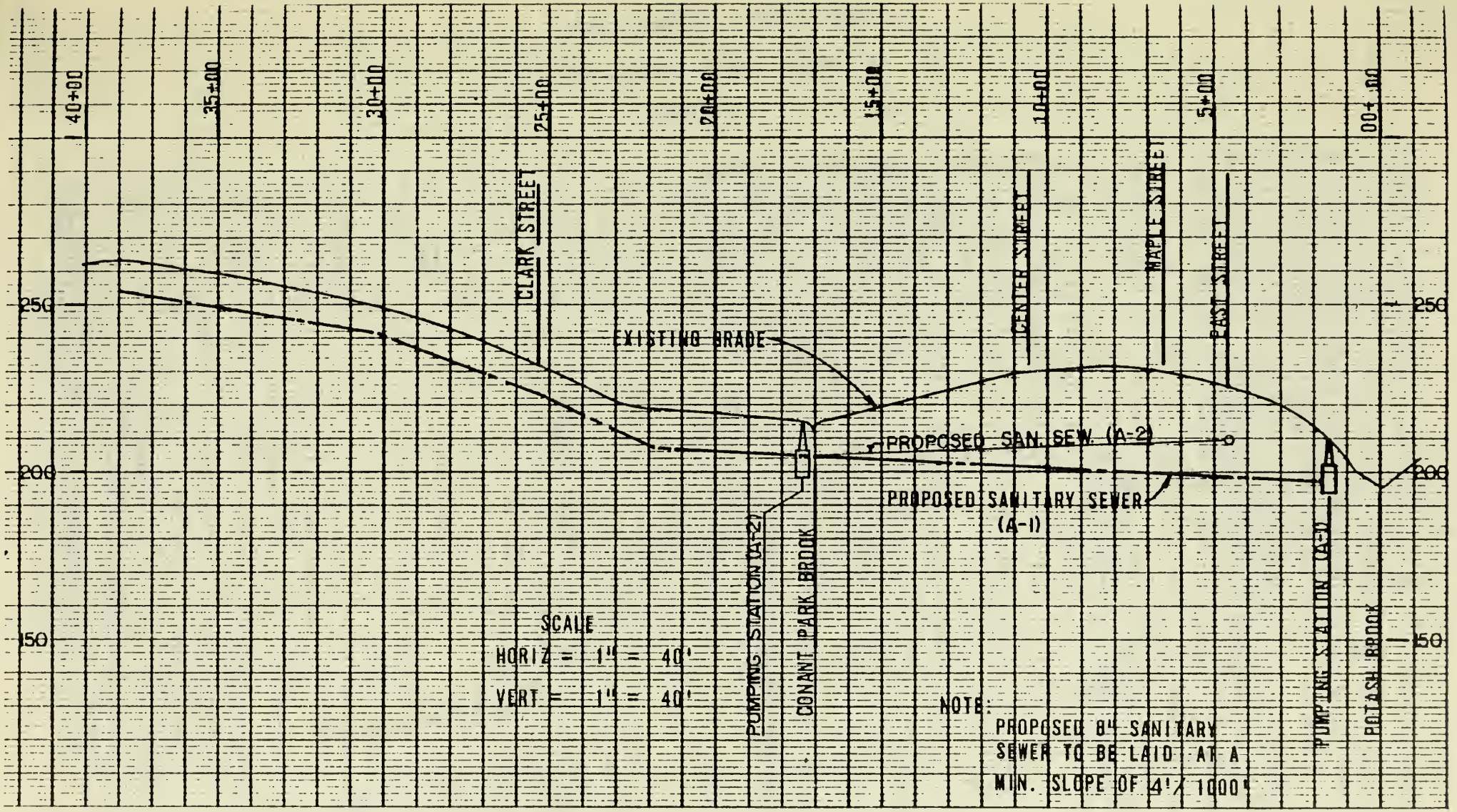
The force main would be sized to accept flows to the pump station from future service areas; i.e.: the area south of Town Center and the Fomer Road area, or the Strong Road - Pleasant Street area.

The 12" interceptor beginning at the intersection of College Highway and Pomeroy Meadow Road would provide the basis for serving Southampton's entire

central corridor. This corridor has been designated for municipal sewerage and water service in the Town's 1990 to 2020 planning projections. The areas which can be served by this interceptor are those areas where future residential zoning currently exists. Soils in many of these developable areas may prove not suitable for on-site disposal systems, again pointing to the need for municipal sewerage.

DISADVANTAGES OF OPTION "A-1"

A high initial cost is incurred for the provision of additional service to areas outside the Town "Center". There is a tendency to spur development, with the construction of an interceptor sewer in areas having marginal soils for subsurface disposal of wastewater. However, the immediately affected areas are those neighborhoods intended for such growth, as reflected by the existing dense residential zoning. Other nearby areas not intended for dense development could be excluded from connecting to this interceptor.



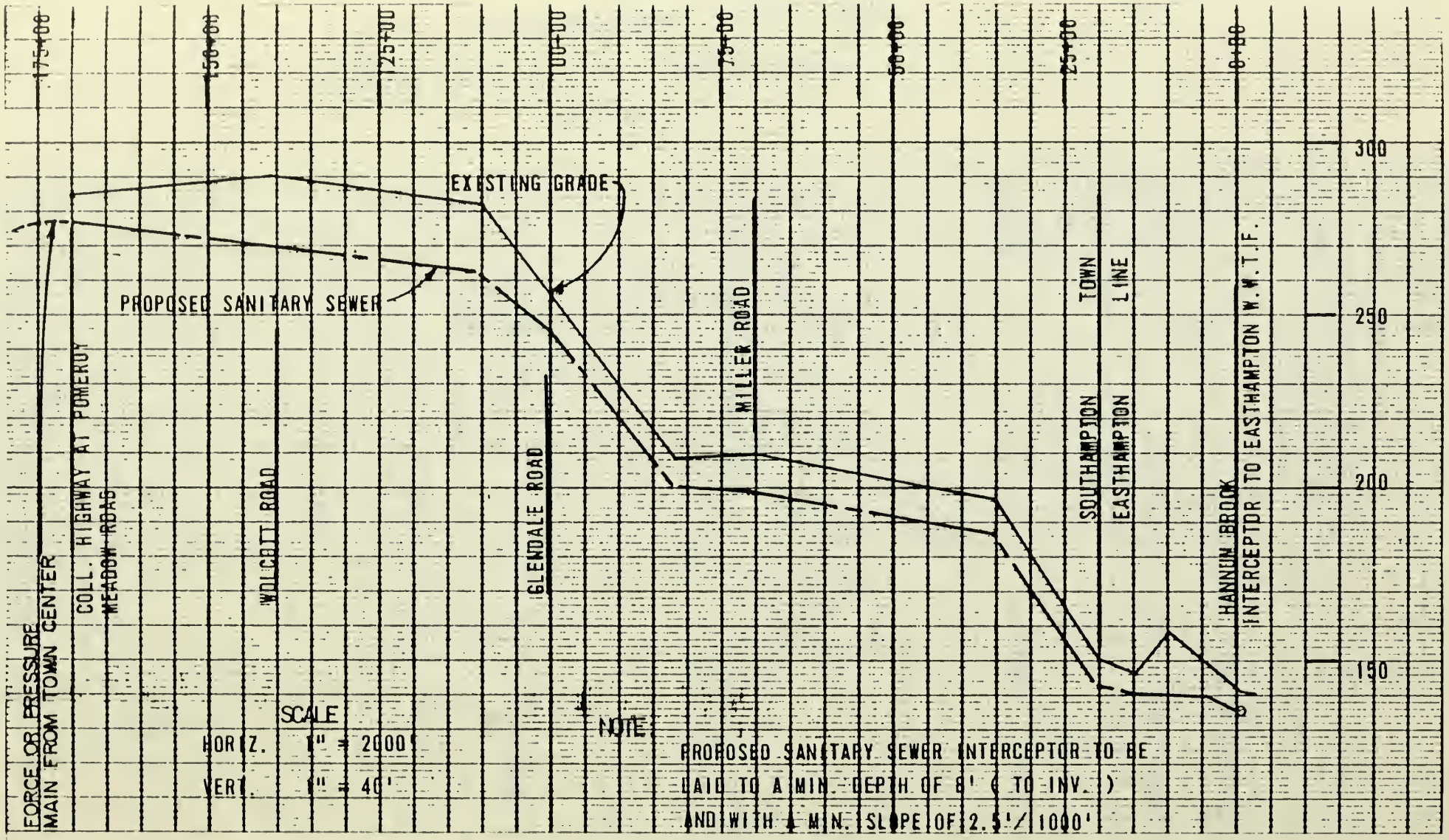
TOWN CENTER

SCHEMATIC PROFILE OF GRAVITY SANITARY SEWER

AT COLLEGE HIGHWAY (LOOKING NORTH)

OPTIONS A-1 & A-2

FIGURE VII-A



PROFILE OF

PROPOSED SANITARY SEWER INTERCEPTOR

ALONG POMEROY MEADOW ROAD

OPTIONS A-1 & A-5

FIGURE VII-B

6.4.2 Option "A-2", Town Center - Local Treatment Plant

This Option would serve only the Town Center area, through development of gravity street sewers servicing Maple Street, Center Street, Clark Street, High Street, East Street and College Highway (Route 10). An interceptor would pass along one edge of Conant Park and discharge to a local Secondary Treatment Plant. Waste sludge by-product from the facility would be trucked, as needed, to either Westfield or Easthampton for contractual processing and disposal. The plant outfall would cross under the railroad tracks and discharge into the Manhan River, a Class "B" water course.

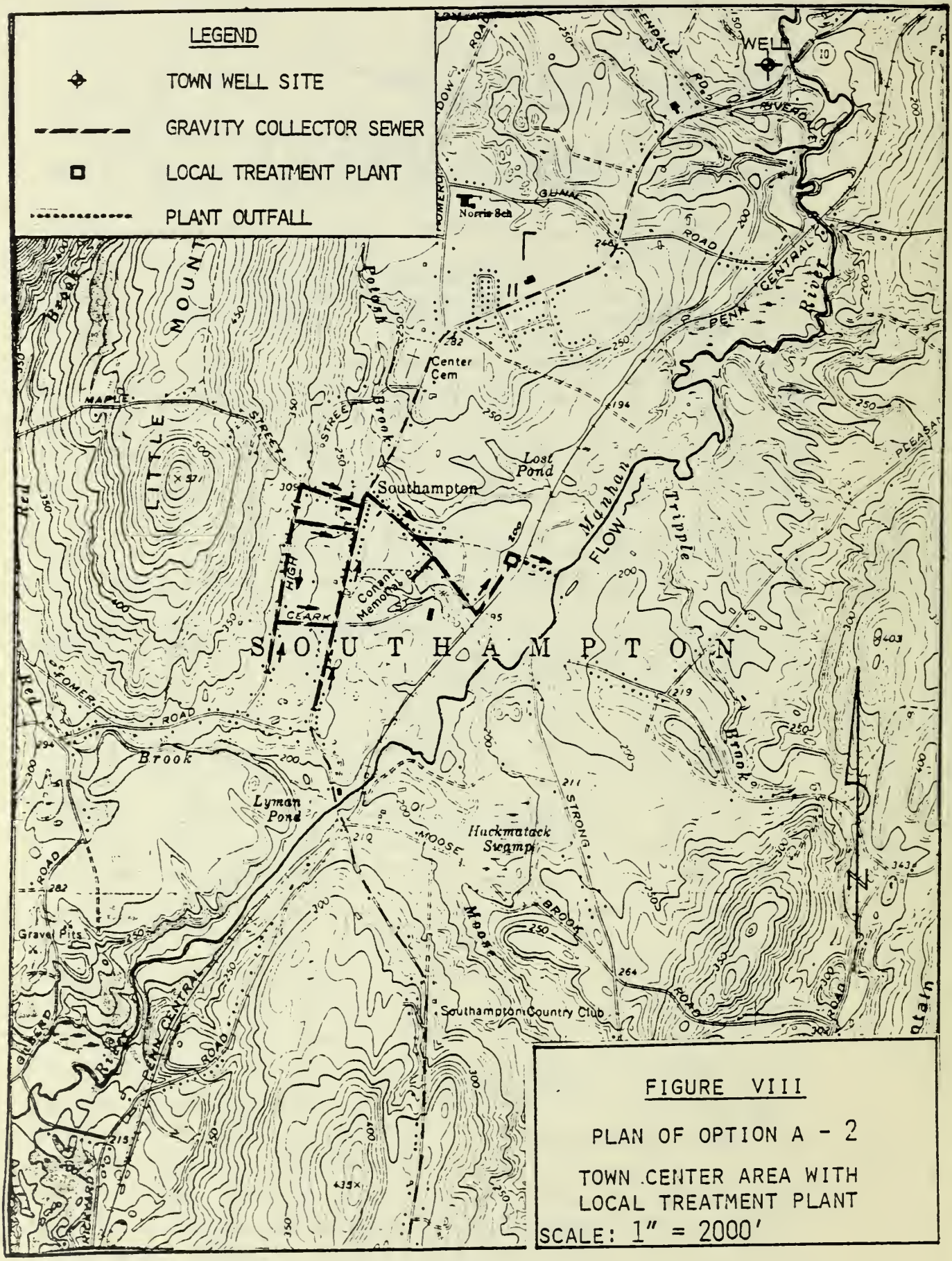


FIGURE VIII

PLAN OF OPTION A - 2

TOWN CENTER AREA WITH LOCAL TREATMENT PLANT

SCALE: 1" = 2000'

TABLE 10

DESIGN CRITERIA - OPTION "A-2"

TOWN CENTER - LOCAL TREATMENT PLANT

A.

SOURCE		AVG. FLOW (GPD)
1. Town Hall 6 persons @ 15 gal/person/day		90
2. Town Hall Assembly 50 persons @ 3 gal/person/day		150
3. Library 7 persons @ 15 gal/person/day		105
4. Fire Station 3 persons @ 15 gal/person/day		45
5. School (center) 265 persons @ 10 gal/person/day		2,650
6. Church 140 persons @ 3 gal/person/day		420
7. Grange 80 persons @ 3 gal/person/day		240
8. Conant Park 100 persons @ 5 gal/person/day		500
9. Eighty-three (83) homes (83 x 3.0 = 249 persons) 249 persons @ 70 gal/person/day		17,430
	PRESENT TOTAL	21,630
10. Future - 20 Additional Homes 20 x 3.0 x 70 gal/person/day		4,200
	FUTURE TOTAL	25,830

B. Peak Flows

1. Peak Flows- Present: (3.0 x Average)= 64,890 GPD (45 GPM)
2. Peak Flows- Future : (3.0 x Average)= 77,490 GPD (55 GPM)

C. Organic Considerations

1. BOD_5 (Present) 0.022 @ 340 mg/l =	62 #/day
2. BOD_5 (Future) 0.025 @ 340 mg/l =	70 #/day
3. TSS (Present) 0.022 @ 430 mg/l =	79 #/day
4. TSS (Future) 0.025 @ 430 mg/l =	90 #/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present)	96 D.U.E.
2. Equivalent Dwelling Units Served (Future)	116 D.U.E.

TABLE 11

COST EVALUATION

OPTION "A-2", TOWN CENTER - LOCAL TREATMENT PLANT

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YR. 20	REMARKS
GRAVITY MAINS:						
7,700 LF	8" @ 0-12'	$35	$269,000	50 Yrs.	$161,000	
3,500 LF	10"	$45	$157,000	50 Yrs.	$ 94,000	Interceptor
800 LF	Outfall	$60	$ 48,000	50 Yrs.	$ 29,000	Jacking & Sleeve
30,000 GPD	Trmt.Plant	--	$160,000	20 Yrs.	$ 0	
	Plant Bldg.	--	$ 32,000	50 Yrs.	$ 19,000	
1 EA	Sludge Truck	--	$ 32,000	10 Yrs.	0	Could share with Ponds area.
90 EA	Abandon Septic Tanks	$200	$ 18,000	50 Yrs.	$ 11,000	
TOTAL CONSTRUCTION COST:			$716,000			
RESIDUAL VALUE AT YEAR 20:					$314,000	
SITES & EASEMENTS:			$ 29,000		$ 29,000	
CONTINGENCIES:			$ 72,000		$ 43,000	10% of Construction Cost
ENGINEERING: (design & construct)			$105,000		$ 63,000	15% of Construction Cost
TOTAL CAPITAL COST:			$922,000		$449,000	
ANNUAL O & M COST:			$ 13,000			
PRESENT WORTH	PER PRESENT D.U.E.:		$ 10,000			
PRESENT WORTH	PER FUTURE D.U.E. :		$ 8,300			
PRESENT WORTH: (20 yrs., 7-1/8%)			$961,000			

All costs in this Table based on Mar. 5, 1981 ENR Construction Cost Index = 3,388

ADVANTAGES OF OPTION "A-2"

The foremost advantage of this Option is the provision of a wastewater collection and treatment system for the Center area; an area plagued with marginal and failing individual subsurface systems on lots not physically able to support systems in compliance with the design requirements of the State Environmental Code (Title V). Future development would be restricted to those areas located adjacent to the sanitary sewers due to the limits of topography.

The total Capital Cost and the annual O & M cost for this Option are among the lowest for those solutions considered here. The cost effectiveness of this solution must, however, be weighed against the possible adverse environmental effects on the Manhan River and the Town water supply well, as discussed in the following paragraphs.

DISADVANTAGES OF OPTION "A-2"

Presently no point source discharges occur along the Manhan River (designated a Class B water segment by

the Massachusetts Division of Water Pollution Control, refer to Section 3, herein), therefore, any discharge permit issued here would doubtlessly establish relatively high effluent quality standards for this treatment plant.

Many environmental considerations beyond the scope of a discharge permit are bound to be questioned if this Option is selected, since the River has a recognized limited assimilative capacity. The point source discharge is not the most environmentally sound choice for the Town Center area, given this questionable capacity of the Manhan River to assimilate the plant effluent, as discussed in Section 4.1.5 hereinbefore.

This Option would require that the point-source discharge occur upstream of the College Highway Municipal Well.

While the Town Highway Department could maintain the collector system, it would be necessary to hire a State Certified Operator, at least part-time, to manage the treatment facilities.

6.4.3 Option "A-3" Town Center - Subsurface Disposal with Gravity Sewers

This Option would involve a conventional gravity collector network in combination with an "alternative technology" disposal method. The raw sewage would be conveyed in the 8" gravity street sewers to a pumping station on Main Street near the Conant Park Brook. The wastewater would then be transported, via a 6" force main, to a local site with suitable conditions for subsurface disposal. Here, the wastewater would be treated by a local treatment plant and the effluent dosed alternately to several subsurface leaching beds. The waste sludge from the package plant would be trucked periodically to one of the two nearby municipal WWTF's for final disposal.

The street sewer collection system would serve essentially the same homes as would the Town Center portion of Option "A-1". The only major difference from that system would be the pumping station location as shown in the schematic profile at the end of Section 6.4.1.

The treatment/disposal site, itself, would require up to three acres of land, depending on specific site conditions and system design. This site could be located in either of two areas; the area bounded by College Highway, Gunn Road, and Pomeroy Meadow Road;

or the area south of Fomer Road and east of Gilbert Road. (Refer to Figure IX).

These areas contain soils of the "Hinckley-Windsor-Merrimac" group which are generally quite suitable for such a community disposal site. The actual site selection would be determined during the Step II design process and must, according to State Regulations, follow actual geo-hydrological field testing of the site, since the daily wastewater flow would be in excess of 15,000 gallons. According to the MA-DWPC, this further testing is not required unless a subsurface disposal option is recommended for implementation.

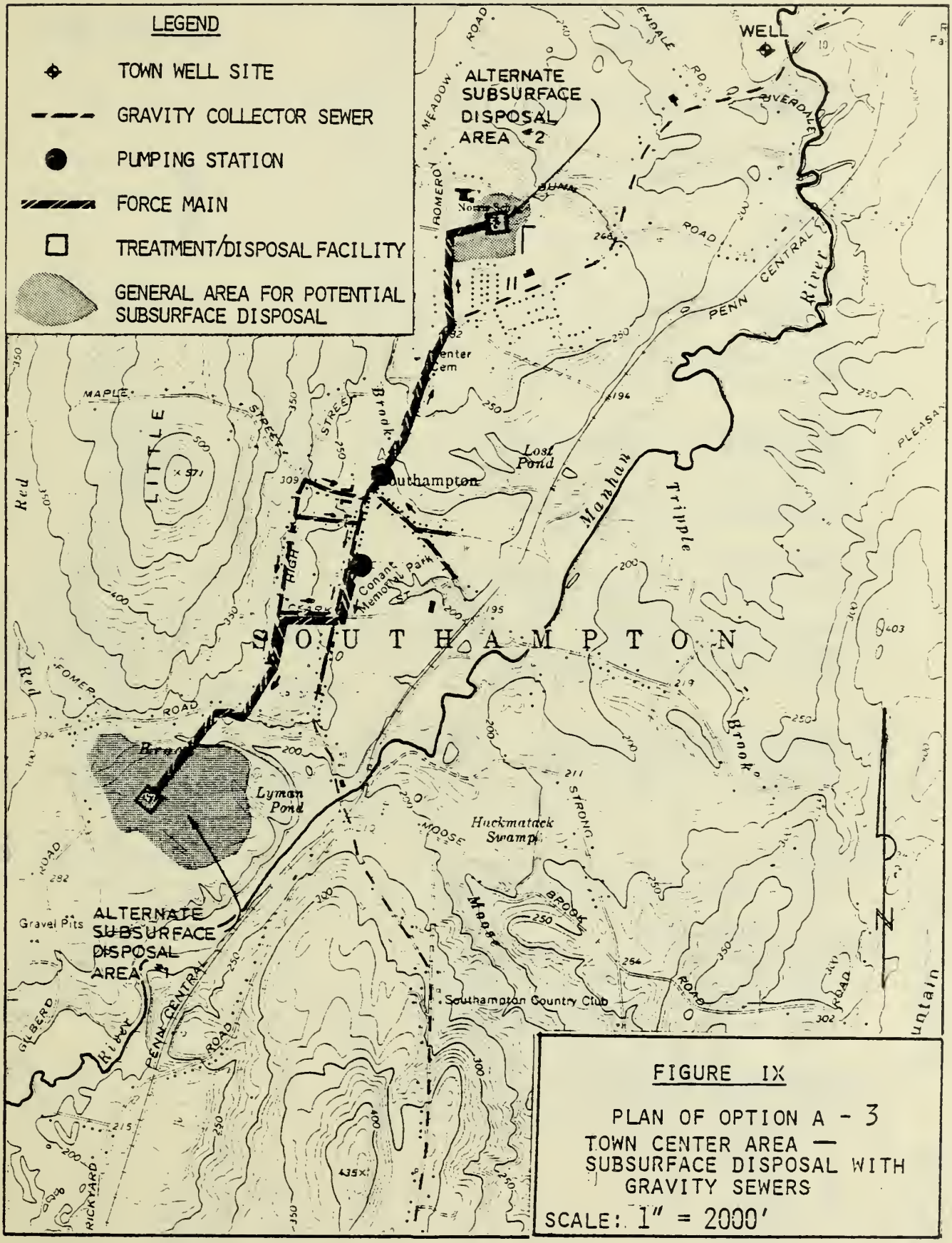


FIGURE IX

PLAN OF OPTION A - 3
TOWN CENTER AREA —
SUBSURFACE DISPOSAL WITH
GRAVITY SEWERS

SCALE: 1" = 2000'

TABLE 12

DESIGN CRITERIA - OPTION "A-3"

TOWN CENTER - SUBSURFACE DISPOSAL WITH GRAVITY SEWER

A.

SOURCE		AVG. FLOW (GPD)
1. Town Hall 6 persons @ 15 gal/person/day		90
2. Town Hall Assembly 50 persons @ 3 gal/person/day		150
3. Library 7 persons @ 15 gal/person/day		105
4. Fire Station 3 persons @ 15 gal/person/day		45
5. School (center) 265 persons @ 10 gal/person/day		2,650
6. Church 140 persons @ 3 gal/person/day		420
7. Grange 80 persons @ 3 gal/person/day		240
8. Conant Park 100 persons @ 5 gal/person/day		500
9. Eighty-Three (83) homes (83 x 3.0 = 249 persons) 249 persons @ 70 /gal/person/day		17,430
	PRESENT TOTAL	21,630
10. Future-20 Additional Homes 20x3.0 x 70 gal/person/day		4,200
	FUTURE TOTAL	25,830

B. Peak Flows

1. Peak Flows Present: (3.0 x Average) = 64,900 GPD (45 GPM)
2. Peak Flows Future : (3.0 x Average) = 77,500 GPD (55 GPM)

C. Organic Considerations

1. BOD_5 (Present): 0.022 @ 340 mg/l = 62 #/day
2. BOD_5 (Future) : 0.025 @ 340 mg/l = 70 #/day
3. TSS (Present): 0.022 @ 430 mg/l = 79 #/day
4. TSS (Future) : 0.025 @ 430 mg/l = 90 #/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present) 96 D.U.E.
2. Equivalent Dwelling Units Served (Future) 116 D.U.E.

TABLE 13

COST EVALUATION

OPTION "A-3", TOWN CENTER, SUBSURFACE DISPOSAL WITH GRAVITY SEWERS

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YR. 20	REMARKS
GRAVITY MAINS:						
7,600 LF	8" @ 0-12'	$35	$266,000	50 Yrs.	$160,000	
1,600 LF	8" @ 12-25'	$50	$ 80,000	50 Yrs.	$ 48,000	
1 EA	60 GPM Pump Sta.	--	$110,000	20 Yrs.	$ 0	Includes standby electric generator
5,000 LF	6" PVC	$20	$100,000	50 Yrs.	$ 60,000	For either disposal site, not in roadway
30,000 GPD	Trmt. Plant	--	$160,000	20 Yrs.	0	
	Plant Bldg.	--	$ 32,000	50 Yrs.	$ 19,000	
1 EA	Sludge Truck	--	$ 32,000	10 Yrs.	$ 0	
3 EA	Dosing Chamber	$15,000	$ 45,000	50 Yrs.	$ 27,000	
50,000 SF	Leaching Bed	$2	$100,000	20 Yrs.	0	
90 EA	Abandon Septic Tanks	$200	$ 18,000	50 Yrs.	$ 11,000	
TOTAL CONSTRUCTION COST:			$943,000			
RESIDUAL VALUE AT YEAR 20:					$325,000	
SITES & EASEMENTS:			$ 33,000		$ 33,000	
CONTINGENCIES:			$ 94,000		$ 56,000	10% of Construction Cost
ENGINEERING(design & construct)			$175,000		$105,000	including geo-hydrologic study
TOTAL CAPITAL COST			$1,245,000		$519,000	
ANNUAL O & M COST:			$ 15,000			
PRESENT WORTH	PER PRESENT D.U.E.:		$ 13,400			All costs in this table based on Mar. 5, 1981 ENR Construction Cost Index = 3,388
PRESENT WORTH	PER FUTURE D.U.E. :		$ 11,100			
PRESENT WORTH (20 yrs. 7-1/8%)			$1,287,000			

ADVANTAGES OF OPTION "A-3"

This Option eliminates the potential discharge to the Manhan River, and could easily be converted to connect to a regional interceptor to the Easthampton WWTF in the future. A regional interceptor along Pomeroy Meadow Road is probable in the future and since the design life of the treatment and disposal facilities is 20 years, while the design life of the collector sewers is 50 years, it may be advantageous to achieve a regional connection at that time when the local treatment and disposal system requires modifications. The proposed force main could be utilized without modification to reach the interceptor if the northern subsurface site is chosen.

It would be possible to expand the system to serve other areas in the Greater Town Center locale at such time as that becomes desirable or necessary.

DISADVANTAGES OF OPTION "A-3"

This Option presents one of the lower total initial capital costs evaluated herein; however, on a cost per present D.U.E. (Dwelling Unit Equivalent) served,

this is one of the most expensive Options. The cost of the pumping station, treatment plant, and subsurface disposal system make this a more expensive Option than the local treatment plant and river discharge (Option "A-2"), which serves the same area with approximately the same collector sewer system; however, the point source discharge to the Manhan River would be avoided by the subsurface disposal Option and the integrity of the existing Town water supply well near the River would be protected.

The Town Highway Department would maintain the collector system, but it would be necessary to hire a State Certified Operator, at least part-time, to manage the treatment facilities. It is entirely possible that this area will ultimately be served by a regional system, constructed to serve the Pomeroy Meadow Road residential growth. At that time, the investment in the treatment and disposal portion of this Option would be negated.

6.4.4. Option "A-4", Town Center Expanded-Subsurface Disposal with Pressure Sewers

This system would provide service to the Town Center area and would include a somewhat more extensive collector network in that area than would any of the options discussed previously (A-1, A-2, or A-3); hence the term Town Center Expanded. This expanded service results from the utilization of an alternative technology pressure sewer collection system, which is not limited by topography as are gravity systems. The pressure sewer system would collect effluent from existing individual buildings and would convey it, by pumping, to a suitable site. There the wastewater would be treated by a local treatment plant and disposed of by subsurface means.

The wastewater would be biologically treated, as is required for flows in excess of 15,000 GPD, by an appropriate treatment system and would be disinfected prior to being alternately dosed to several subsurface leaching beds. Two possible areas have been determined to be the most suitable choices near Town Center and are graphically depicted in Figure X. Appendices A-1,2,3 & 4 present supportive data concerning this preliminary disposal site selection. Each of the two areas consists of Hinckley Loamy Sand and/or Merrimac Fine Sandy Loam; soils highly compatible with subsurface disposal.

(page 91 reserved)

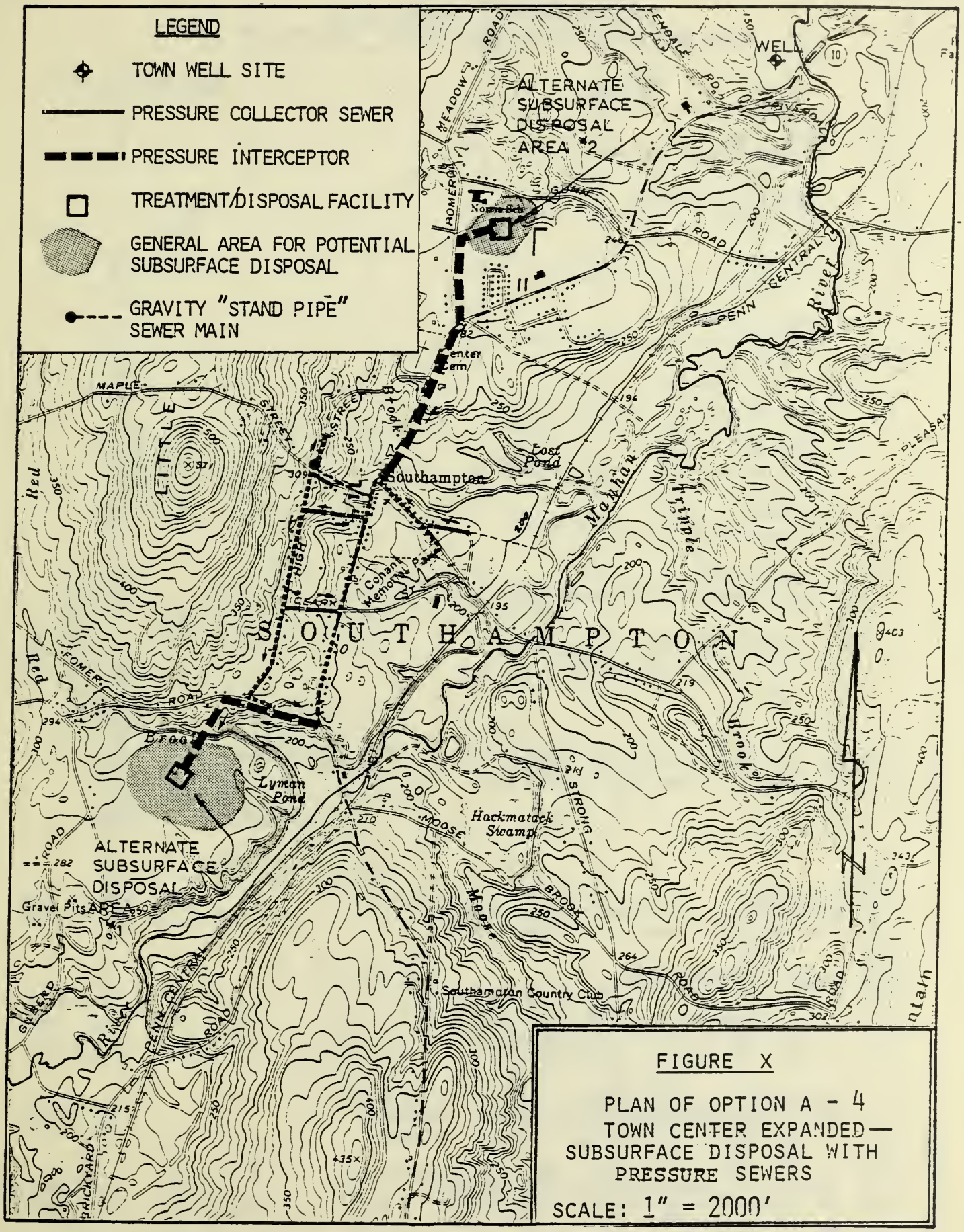


FIGURE X

PLAN OF OPTION A - 4
TOWN CENTER EXPANDED—
SUBSURFACE DISPOSAL WITH
PRESSURE SEWERS

SCALE: 1" = 2000'

TABLE 14

DESIGN CRITERIA - OPTION "A-4"

TOWN CENTER EXPANDED - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

A.

SOURCE		AVG. FLOW (GPD)
1. Town Hall 6 persons @ 15 gal/person/day		90
2. Town Hall Assembly 50 persons @ 3 gal/person/day		150
3. Library 7 persons @ 15 gal/person/day		105
4. Fire Station 3 persons @ 15 gal/person/day		45
5. School (center) 265 persons @ 10 gal/person/day		2,650
6. Church 140 persons @ 3 gal/person/day		420
7. Grange 80 persons @ 3 gal/person/day		240
8. Conant Park 100 persons @ 5 gal/person/day		500
9. One Hundred-Four (104) Homes (104 x 3.0 = 312 persons) 312 persons @ 70 gal/person/day		21,840
	PRESENT TOTAL	26,040
10. Future - 30 Additional Homes 30 x 3.0 x 70 gal/person/day		6,300
	FUTURE TOTAL	32,340

B. Peak Flows

1. Peak Flows - Present: (3.0 x Average) = 78,120 GPD (55 GPM)
2. Peak Flows - Future: (3.0 x Average) = 97,020 GPD (70 GPM)

C. Organic Considerations

1. BOD_5 (Present): 0.026 @ 340 mg/l = 74 #/day
2. BOD_5 (Future) : 0.032 @ 340 mg/l = 91 #/day
3. TSS (Present): 0.026 @ 430 mg/l = 93 #/day
4. TSS (Future) : 0.032 @ 430 mg/l = 115 #/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present) 117 D.U.E.
2. Equivalent Dwelling Units Served (Future) 147 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

1. Present: 117 D.U.E. x 1.0 GPM/D.U.E.* 117 GPM(0.168MGD)
2. Future: 147 D.U.E. x 0.9 GPM/D.U.E.* 132 GPM(0.190MGD)

*Head controlled output of all pumps operating together.

TABLE 15

COST EVALUATION

OPTION "A-4", TOWN CENTER, EXPANDED SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YR. 20	REMARKS
6,200 LF	2" PVC	$14	$ 86,800	50 Yrs.	$ 52,000	
7,000 LF	3" PVC	$15	$105,000	50 Yrs.	$ 63,000	
5,000 LF	5" PVC	$18	$ 90,000	50 Yrs.	$ 54,000	
1,000 LF	Stand Pipe	$40	$ 40,000	50 Yrs.	$ 24,000	
12 EA	Air Relief Valves	$210	$ 2,500	35 Yrs.	$ 1,100	
70 EA	Clean Out Struct's	$260	$ 18,200	50 Yrs.	$ 11,000	
18 EA	Valves w.Boxes	$650	$ 11,700	35 Yrs.	$ 5,000	
117 EA	House pump Units	$2,700	$315,900	35 Yrs.	$ 136,000	
100 EA	Abandon Septic Tanks	$200	$ 20,000	50 Yrs.	$ 12 ,000	
1 EA	Septage Truck	--	$ 32,000	10 Yrs.	0	Could share with Pequot Pond Area
30,000 GPD	Trmt. Plant	--	$ 160,000	20 Yrs.	0	
	Plant Bldg.	--	$ 32,000	50 Yrs.	$ 19,000	
3 EA	Dosing Chamber	$15,000	$ 45,000	50 Yrs.	$ 27,000	
50,000 SF	Leaching Beds	$2	$ 100,000	20 Yrs.	0	
TOTAL CONSTRUCTION COST:			$1,059,100			
RESIDUAL VALUE AT YEAR 20:					$ 404,100	
SITES AND EASEMENTS:			$ 33,000		$ 33,000	
CONTINGENCIES:			$ 106,000		$ 64,000	10% of Construction Cost
ENGINEERING (design & construct):			$ 210,000		$ 126,000	includes geo-hydrologic study
TOTAL CAPITAL COST:			$1,408,000		$ 627,100	
ANNUAL O & M COST:			$ 19,000			
PRESENT WORTH	PER PRESENT D.U.E.:		$ 12,500			
PRESENT WORTH	PER FUTURE D.U.E.:		$ 10,000			
PRESENT WORTH: (20 yrs., 7-1/8%)			$1,465,000			

All costs in this table based on Mar. 5, 1981 ENR Construction Cost Index = 3,388

ADVANTAGES OF OPTION "A-4"

This Option would provide a semi-permanent solution to the waste water disposal problems in the Town Center area, and would avoid the problems associated with a local point source discharge as discussed in Option "A-2". The costs, personnel and equipment relegated to the O&M of the pressure sewers and/or the treatment and disposal facilities could be shared with the Pequot Pond area system if a pressure or subsurface Option is chosen there.

This Option allows a portion of the future system expansion costs (that of the house pump units) to be borne directly by the user in the case of house connections. In some cases, the pressure collectors employed for expansion will be those already installed to service the existing homes as a portion of this project.

The pressure collector system, utilized in this Option and in Option "A-5", allows the servicing of approximately 20 more homes in the Town Center Area than does a gravity system, due to topographical considerations. Although these additional homes are generally those with the more suitable on-site

conditions and lot sizes in the Town Center area, the environmental and public health benefits of this expanded coverage are of substantial present and future merit.

DISADVANTAGES OF OPTION "A-4"

This Option does not prove to be a cost effective solution in terms of total capital cost per D.U.E. served, either present or future; and the annual O&M cost is estimated to be one of the highest of any considered on a per user basis.

The treatment and disposal facilities associated with this Option would be superfluous in the future should the Pomeroy Meadow Road corridor regional interceptor to the Easthampton WWTF be implemented.

If this Option is selected, a relatively expensive disposal site selection process must be pursued as mentioned previously in the introductory discussion of this Section.

A State Certified Treatment Plant Operator would be required, at least part-time, to manage the treatment facility. The Operator could be shared with a Pond Area facility, if applicable, or with other Town Departments.

6.4.5. Option "A-5", Greater Town Center-Regional Solution with Pressure Collector Sewers and Gravity Interceptor

This Option would provide service to the Town Center problem area as well as to those portions of College Highway, Mountain View Circle, Gunn Road and Pomeroy Meadow Road (including the Norris Middle School) which form the majority of the residential concentration north of Town Center.

The Town Center area would be served by a pressure sewer collector network nearly identical to that described in Option "A-4". This system would gather effluent from the homes via individual pump units, and transport it to the intersection of College Highway and Pomeroy Meadow Road where it would discharge to a proposed gravity regional interceptor sewer. This interceptor would gravity flow northerly along Pomeroy Meadow Road to the Town Boundary where it would join Easthampton's existing Hannum Brook Interceptor for treatment at the Easthampton WWTF. A schematic profile for the Pomeroy Meadow Road interceptor is shown at the end of Section 6.4.1. The residential areas north of and along Pomeroy Meadow Road would be served by conventional street collector sewers.

The pressure collector system in the Town Center would be split into two separate networks: higher elevation and lower elevation areas. Each of these two pressure collector networks would operate independently but would be joined by a section of gravity sewer which acts rather like a standpipe. The standpipe would serve to both separate the pressures and to connect the collection functions of these systems. This allows each network to operate at a lower pressure than would a single large system.

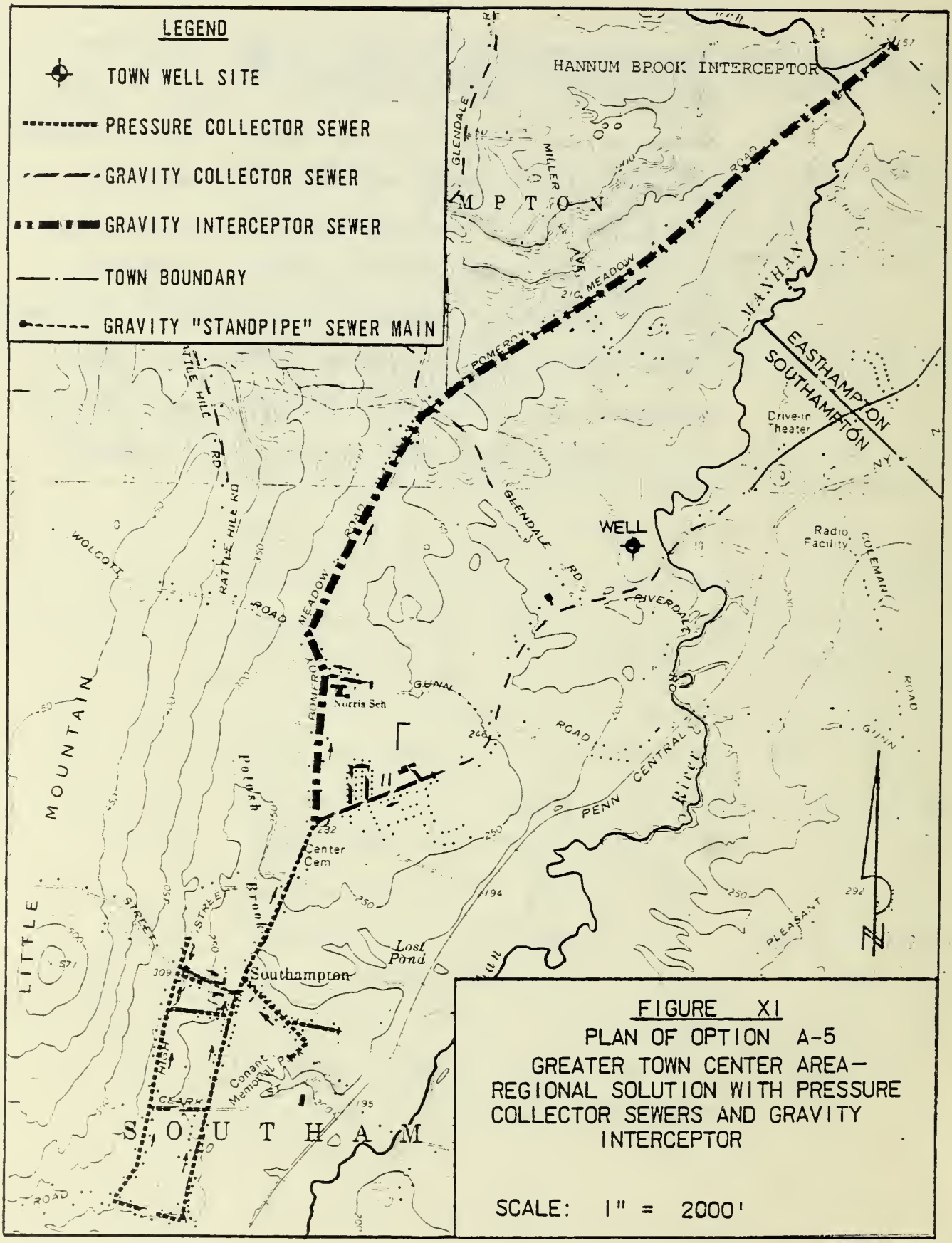


FIGURE XI

PLAN OF OPTION A-5

GREATER TOWN CENTER AREA—
REGIONAL SOLUTION WITH PRESSURE
COLLECTOR SEWERS AND GRAVITY
INTERCEPTOR

SCALE: 1" = 2000'

ALMER HUNTLEY, JR., & ASSOCIATES, INC.
SURVEYORS · ENGINEERS · PLANNERS

TABLE 16

DESIGN CRITERIA - OPTION "A-5"

GREATER TOWN CENTER - REGIONAL SOLUTION WITH PRESSURE COLLECTOR SEWERS & GRAVITY INT.

Part I Town Center Pressure System

A.	SOURCE	AVG. FLOW (GPD)
1.	Town Hall 6 persons @ 15 gal/person/day	90
2.	Town Hall Assembly 50 persons @ 3 gal/person/day	150
3.	Library 7 persons @ 15 gal/person/day	105
4.	Fire Station 3 persons @ 15 gal/person/day	45
5.	School (center) 265 persons @ 10 gal/person/day	2,650
6.	Church 140 persons @ 3 gal/person/day	420
7.	Grange 80 persons @ 3 gal/person/day	240
8.	Conant Park 100 persons @ 5 gal/person/day	500
9.	One Hundred-Four (104) Homes (104 x 3.0 = 312 persons) 312 persons @ 70 gal/person/day	21,840
	Town Center Portion - PRESENT TOTAL	26,040
10.	Future - 30 Additional Homes 30 x 3.0 x 70 gal/person/day	6,300
	Town Center Portion - FUTURE TOTAL	32,340

. Peak Flows

1. Peak Flows - (Present): (3.0 x Average) = 78,100 GPD (55 GPM)
2. Peak Flows - (Future) : (3.0 x Average) = 97,000 GPD (70 GPM)

. Organic Considerations

1. BOD_5 (Present): 0.026 @ 340 mg/l = 74 #/day
2. BOD_5 (Future) : 0.032 @ 340 mg/l = 91 #/day
3. TSS (Present): 0.026 @ 430 mg/l = 93 #/day
4. TSS (Future) : 0.032 @ 430 mg/l = 115 #/day

TABLE 16 (continued)

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present)	117 D.U.E.
2. Equivalent Dwelling Units Served (Future)	147 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

1. Present: 117 D.U.E. x 1.0 GPM/D.U.E.*	117 GPM(0.168 MGD)
2. Future : 147 D.U.E. x 0.9 GPM/D.U.E.*	132 GPM(0.190 MGD)

* Head controlled output of all pumps operating together

PART II Total Option A-5 Flows & Loadings

A. SOURCE	AVG. FLOW (GPD)
1. Flow from Town Center (previous page)	26,040
2. Norris Middle School 375 persons @ 20 gal/person/day	7,500
3. Red Basket 250 persons @ 10 gal/person/day	2,500
4. Post Office 3 persons @ 15 gal/person/day	45
5. Service Station 1 island @ 300 gal/island/day	300
6. Store Complex (Route 10 and Pomeroy): Restaurant - 40 seats @ 10 gal/person/day 1500 sf store @ 5 gal/100 sf /day	 400 75
7. Super Market Complex: Gullivers Restaurant - 77 seats @ 10 gal/person/day Super Market & Aqua Nook - 20,000 sf @ 5 gal/100sf/day Bank - 5000 sf @ 75 gal/1000 sf /day	 770 1,000 375
8. County Road Apartments 60 Apartments x 3.0 x 70	12,600
9. Homes on Pomeroy Meadow Road 85 Homes x 3.0 x 70	17,850
10. Hampton South Condominiums 24 Units x 3.0 x 70	5,040
11. College Highway Area 40 Homes x 3.0 x 70	8,400
Total Option A-5 PRESENT TOTAL	82,895 GPD

(continued)

TABLE 16 (continued)

12. Future Development:

20 Homes - Center Area

+329 Homes - Route 10 and Pomeroy Meadow Road

349 Homes x 3.0 x 70	73,290	
Total Option A-5 FUTURE TOTAL	156,185	(GPD)

TOTAL OPTION A - 5:

B. Peak Flows:
1. Peak Flow-Present: (3.0 x Average) = 248,685 GPD (170 GPM)
2. Peak Flow-Future : (3.0 x Average) = 468,555 GPD (325 GPM)

C. Organic Considerations:

1. BOD_5 (Present): 0.083 @ 340 mg/l =	235	#/day
2. BOD_5 (Future): 0.156 @ 340 mg/l =	440	#/day
3. TSS (Present): 0.083 @ 430 mg/l =	300	#/day
4. TSS (Future) : 0.156 @ 430 mg/l =	560	#/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present)	366 D.U.E.
2. Equivalent Dwelling Units Served (Future)	715 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

1. Present: 117 D.U.E. x 1.0 GPM/D.U.E.	117 GPM(0.168MGD)
2. Future: 147 D.U.E. x 0.9 GPM/D.U.E.	132 GPM(0.190MGD)

TABLE 17

COST EVALUATION

OPTION "A-5", GREATER TOWN CENTER REGIONAL SOLUTION WITH PRESSURE SEWERS AND GRAVITY INTERCEPTOR

QUANTITY	ITEM	UNIT $	COST	LIFE	SALVAGE VALUE	REMARKS
6,200 LF	2" PVC	$14	$ 86,800	50 Yrs	$ 52,000	
7,000 LF	3" PVC	$15	$ 105,000	50 Yrs.	$ 63,000	
3,000 LF	5" PVC	$18	$ 54,000	50 Yrs.	$ 32,400	
1,000 LF	Stand Pipe	$40	$ 40,000	50 Yrs.	$ 24,000	
4,100 LF	8" @ 0-12'	$35	$ 143,500	50 Yrs.	$ 86,100	
11,000 LF	12" @ 0-15'	$50	$ 550,000	50 Yrs.	$ 330,000	
5,000 LF	12" @15-25'	$65	$ 325,000	50 Yrs.	$ 195,000	
12 EA	Air Relief Valves	$210	$ 2,520	35 Yrs.	$ 1,100	
60 EA	Clean Out Struct's	$260	$ 15,600	50 Yrs.	$ 9,400	
15 EA	Valves w.Boxes	$650	$ 9,750	35 Yrs.	$ 4,200	
117 EA	House Pump Units	$2,700	$ 316,000	35 Yrs.	$ 136,000	
1 EA	Septage Truck	LS	$ 32,000	10 Yrs.	0	
100 EA	Abandon Septic Tanks	$200	$ 20,000	50 Yrs.	$ 12,000	
TOTAL CONSTRUCTION COST			$1,700,000			
RESIDUAL VALUE AT YEAR 20					$ 945,000	
SITES AND EASEMENTS						
COST SHARE OF EASTHAMPTON WWTF			$ 100,000		0	
CONTINGENCIES			$ 170,000		$ 102,000	10% of Construction Cost
ENGINEERING (design & construct)			$ 255,000		$ 153,000	15% of Construction Cost
TOTAL CAPITAL COST:			$2,225,000		$1,200,000	
ANNUAL O & M COST:			$ 32,000			All costs in this report based on Mar. 5, 1981 ENR Const. Cost. Index = 3,388
PRESENT WORTH PER PRESENT D.U.E.			$ 6,210			
PRESENT WORTH PER FUTURE D.U.E.			$ 3,180			
PRESENT WORTH (20 yrs, 7-1/8%)			$2,274,000			

ADVANTAGES OF OPTION "A-5"

This Option would provide a permanent solution to the wastewater disposal problems of the Town Center Area and the northern section of Town including the Town schools and most other municipal buildings. The Norris School, which currently relies on subsurface disposal for all wastewater disposal, is responsible for food preparation for the entire public school system and would benefit from this Option.

This Option would utilize the existing Easthampton Wastewater Treatment Facility (WWTF), thereby both eliminating the need and costs for such an installation in Southampton, and eliminating any possible threat to the integrity of the College Highway municipal well which might result from any of the local treatment options.

Several areas north of Town Center, along the proposed Pomeroy Meadow Road interceptor, are currently experiencing new residential construction. A report by Metcalf and Eddy, Inc. entitled "Planning for Zoning in Southampton", projects new home subdivisions served by municipal water and sewerage systems in these areas by the 1990 to 2020 period.

The total Capital and O&M costs, both present and future, per D.U.E. for this proposed system would be among the lowest of the Town Center Options. This Option serves a 5% greater number of initial users, and a 12% greater number of future users than does Option "A-1".

DISADVANTAGES OF OPTION "A-5"

A seemingly high initial project cost is incurred due to the provision of service to areas along the proposed interceptor outside of Town Center; however, the project cost on a "per Present Dwelling Unit Equivalent Served" basis is actually among the lowest of the Options.

There is a tendency to spur development, with the addition of an interceptor sewer in areas having marginal soils for subsurface disposal of wastewater; however, the affected areas here are those neighborhoods intended for such growth, as reflected by the dense residential zoning. Other nearby areas not intended for dense development would be excluded from connecting to this interceptor due to the topography.

6.4.5.a Option "A-6", Limited Town Center - Pressure Collector Sewers and Subsurface Disposal

Option "A-6" is similar to Option "A-4" but serves only those homes in Town Center identified by the Town Board of Health as currently having the most pressing subsurface disposal problems. Reducing the flow to the 15,000 gpd State standard permits the direct subsurface discharge of effluent without the need for intermediate treatment; thus, the sewage treatment plant, necessary as part of Option "A-4", is not required.

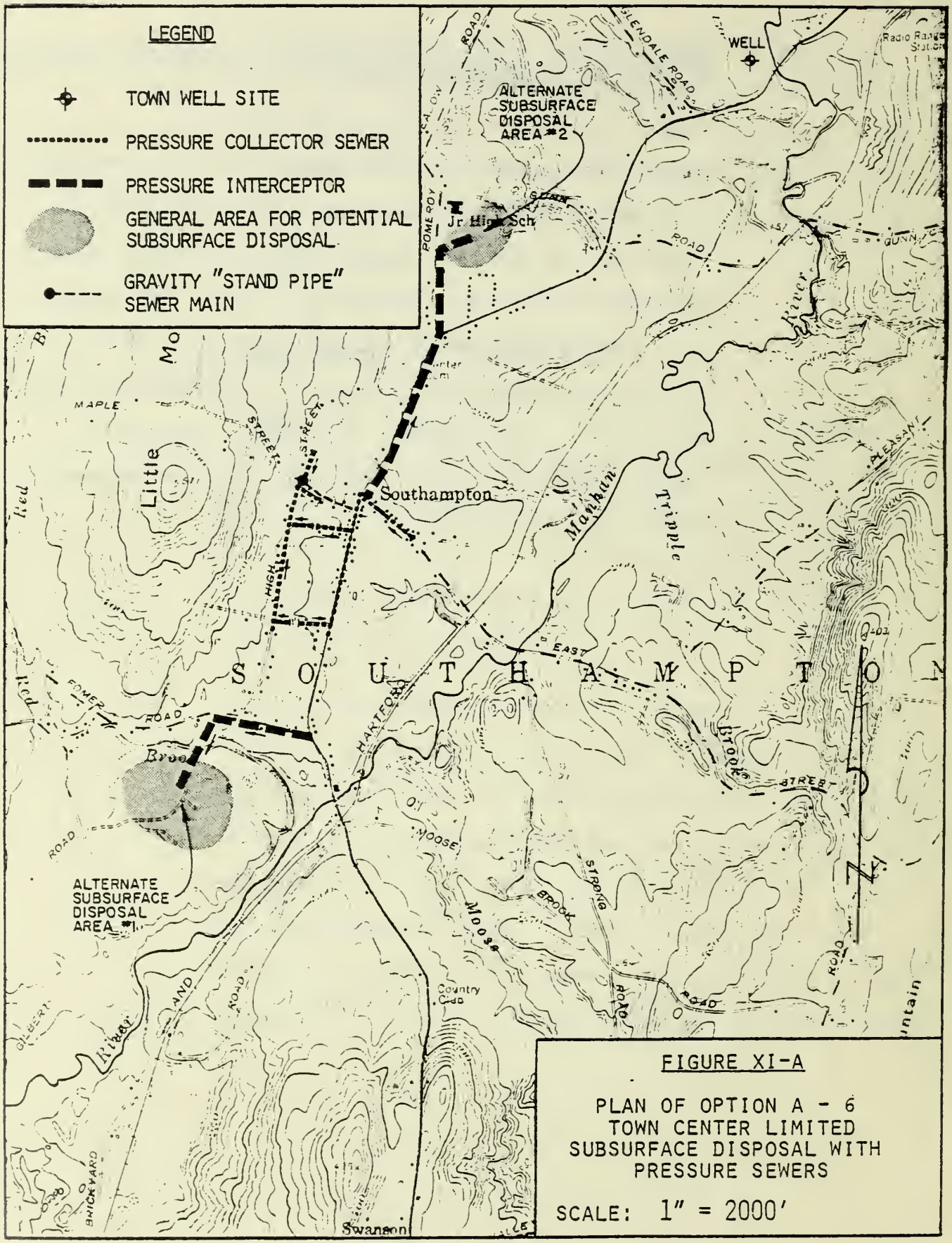


FIGURE XI-A

PLAN OF OPTION A - 6
TOWN CENTER LIMITED
SUBSURFACE DISPOSAL WITH
PRESSURE SEWERS

SCALE: 1" = 2000'

TABLE 17-A

DESIGN CRITERIA - OPTION "A-6"
TOWN CENTER LIMITED - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

A. Source	AVERAGE FLOW (GPD)
1. Town Hall 6 persons @ 15 gal/person/day	90
2. Town Hall Assembly 50 persons @ 3 gal/person/day	150
3. Library 7 persons @ 15 gal/person/day	105
4. Fire Station 3 persons @ 15 gal/person/day	45
5. School (center) 265 persons @ 10 gal/person/day	2,650
6. Church 140 persons @ 3 gal/person/day	420
7. Grange 80 persons @ 3 gal/person/day	240
8. Conant Park 100 persons @ 5 gal/person/day	500
9. Sixty (60) Homes (60 x 3.0 = 180 persons) 180 persons @ 70 gal/person/day	12,600
PRESENT TOTAL:	16,800

B. Peak Flows

1. Peak Flows - Present: (3.0 x Average) = 50,400 GPD (35 GPM)

C. Organic Considerations

1. BOD_5 (Present): 0.017 @ 340 = 48#/day

2. TSS (Present): 0.017 @ 430 = 61#/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present) 73 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

1. Present: 73 D.U.E. x 1 GPM/D.U.E.* 73 GPM (0.083 MGD)

*Head controlled output of all pumps operating together.

COST EVALUATION

OPTION "A-6", TOWN CENTER, LIMITED SERVICE, SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

QUANTITY	ITEM	UNIT $	COST	LIFE	Residual Value @ yr. 20	REMARKS
6,200 LF	2" PVC	$14	$ 86,800	50 Yrs	$ 52,000	
4,500 LF	3" PVC	$15	$ 105,000	50 Yrs.	$ 63,000	
5,000 LF	5" PVC	$18	$ 90,000	50 Yrs.	$ 54,000	
1,000 LF	Stand Pipe	$40	$ 40,000	50 Yrs.	$ 24,000	
12 EA	Air Relief Valves	$210	$ 2,520	35 Yrs.	$ 1,100	
70 EA	Clean Out Struct's	$260	$ 18,200	50 Yrs.	$ 11,000	
18 EA	Valves w.Boxes	$650	$ 11,700	35 Yrs.	$ 5,000	
70 EA	House Pump Units	$2,700	$ 189,000	35 Yrs.	$ 81,000	
70 EA	Abandon Septic Tanks	$200	$ 14,000	50 Yrs.	8,000	
1 EA	Septage Truck	L.S.	$ 32,000	10 Yrs.	0	
	Dosage Chambers, Septic Tanks, etc.	L.S.	$ 45,000	50 Yrs.	$ 27,000	
12 EA	Leaching Pits	$2,500	$ 30,000	20 Yrs.	0	
TOTAL CONSTRUCTION COST:			$ 664,000			
RESIDUAL VALUE AT YEAR 20:					$ 326,000	
SITES AND EASEMENTS:			$ 33,000		$ 33,000	
CONTINGENCIES:			$ 66,000		$ 40,000	
ENGINEERING:			$ 100,000		$ 60,000	
TOTAL CAPITAL COSTS:			$ 863,000		$ 459,000	
ANNUAL O & M COSTS:			$ 9,000			
PRESENT WORTH PER PRESENT D.U.E.:			$ 11,750			
PRESENT WORTH (20 yrs. - 7-1/8%):			$ 858,000			

All costs in this table based on Mar. 5, 1981 ENR Const. Cost Index = 3,388.

ADVANTAGES AND DISADVANTAGES OF OPTION "A-6"

The advantages and disadvantages of this option are essentially the same as those reported for Option "A-4".

This option does, however, have one additional advantage and disadvantage when compared to Option "A-4", caused by the reduction in flow: the need for a sewage treatment plant is eliminated, saving both capital and O & M costs, but the ability of the system to expand is severely limited.

6.4.6. Option "B-1", Pequot Pond Area - Regional Solution with Gravity Sewers

Option "B-1" would develop a gravity sewer collection system along the eastern side of Pequot Pond to eliminate water pollution problems. The solution is regional in scope with treatment of collected wastes at the Westfield WWTF. Capacity would be available in the system to accept wastewater from 20 to 30 existing homes in the adjacent East Pond neighborhood that are actually situated in Westfield, but exhibit similar disposal problems.

Pond area wastewater would be collected by gravity sewers and conveyed to a pumping station at the north end of the Pond where a force main would transfer the sewage to a gravity interceptor sewer ("Pequot Interceptor"), proposed as a portion of this project, which would, in turn, discharge into the City of Westfield's Arm Brook Interceptor. The Arm Brook Interceptor is designed to accommodate the flows from the entire Pequot Pond locale, the majority of which lies in Westfield and suffers problems similar to those of the Southampton area. The wastewater would be transported to the existing Westfield WWTF

for treatment and discharge.

The "Pequot Interceptor" sewer would provide the opportunity to sewer the western and southwestern portions of the Ponds vicinity; areas lying in both Southampton and Westfield.

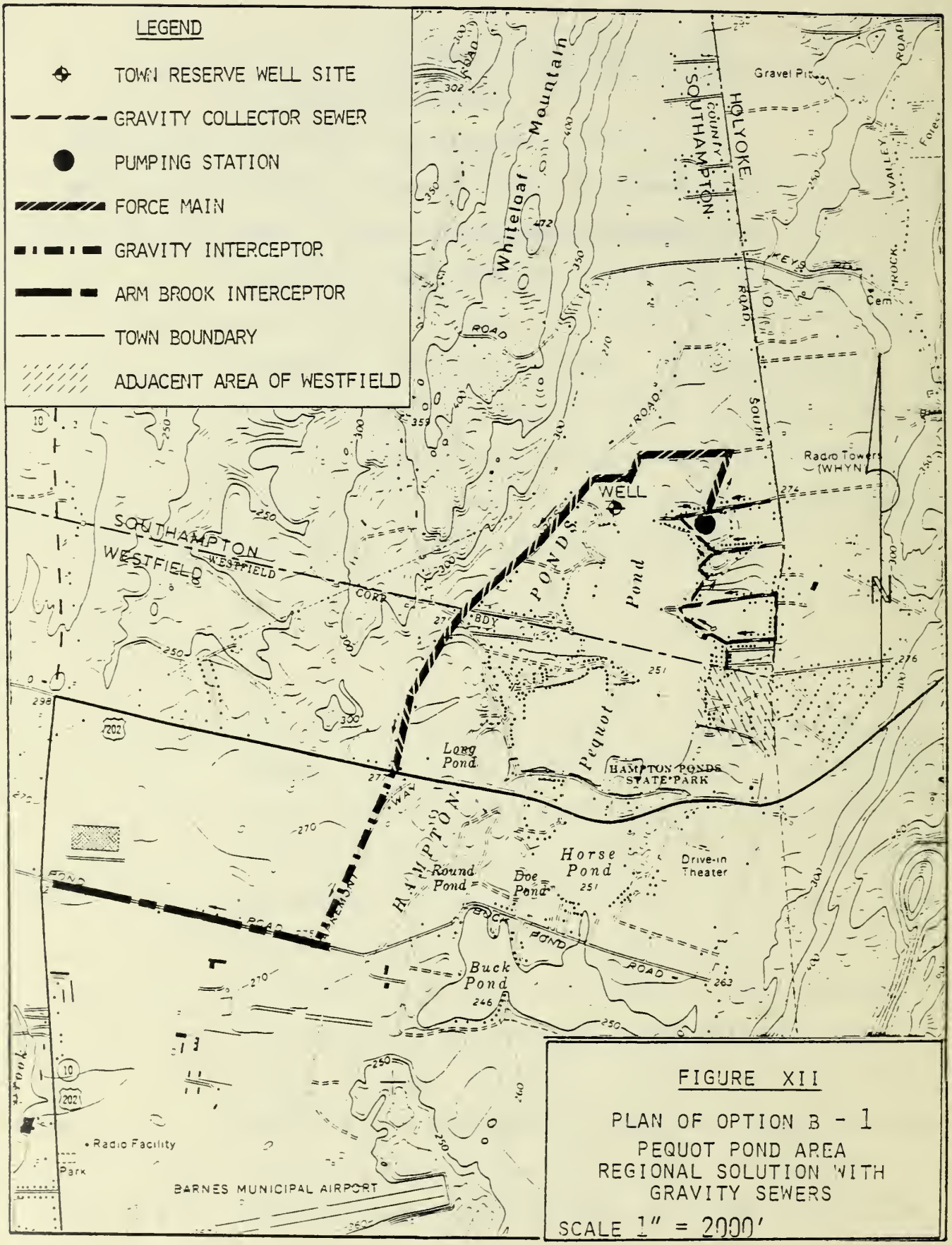


FIGURE XII

PLAN OF OPTION B - 1
PEQUOT POND AREA
REGIONAL SOLUTION WITH
GRAVITY SEWERS

SCALE 1" = 2000'

TABLE 18

DESIGN CRITERIA - OPTION "B-1"

PEQUOT POND AREA - REGIONAL SOLUTION WITH GRAVITY SEWERS

A.

SOURCE		AVG. FLOW (GPD)
1. Homes at Pond 110 homes x 2.5 people/home x 70 gpd/capita		19,250
2. Bleumer Road Fire Station 3 persons @ 15 gal./person/day		45
3. Aloha Snack Bar (Seasonal) 15 seats @ 10 gal./seat/day		150
4. Mahoney's Package Store 35 persons @ 3 gal./person/day		105
5. Camp Jahn (Seasonal) 250 persons @ 20 gal./person/day		5,000
	PRESENT TOTAL	24,550
6. Future - 35 additional homes 35 x 2.5 x 70 gal/person day		6,125
	FUTURE TOTAL	30,675

B. Peak Flows
1. Peak Flows (Present) (3.0 x Average) = 73,650 GPD(50 GPM)
2. Peak Flows (Future) (3.0 x Average) = 92,025 GPD(65 GPM)

C. Organic Considerations
1. BOD_5 (Present) 0.024 @ 340 = 68#/day
2. BOD_5 (Future) 0.031 @ 340 = 88#/day
3. TSS^5 (Present) 0.024 @ 430 = 86#/day
4. TSS (Future) 0.031 @ 430 = 111#/day

D. Equivalent Dwelling Units
1. Equivalent Dwelling Units Served (Present) 129 D.U.E.
2. Equivalent Dwelling Units Served (Future) 154 D.U.E.

TABLE 19
COST EVALUATION
OPTION "B-1", PEQUOT POND AREA - REGIONAL SOLUTION WITH GRAVITY SEWERS

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YEAR 20	REMARKS
10,200 LF	8" @ 0-16'	$40	$ 408,000	50 years	$ 245,000	
2,700 LF	12" @ 15-25'	$65	$ 175,500	50 years	$ 105,000	
1 EA	65 GPM Pump Station	-	$ 110,000	20 years	0	
8,600 LF	6" PVC	$20	$ 172,000	50 years	$ 103,000	Could eventually share costs of lift station & force main/ interceptor with Holyoke and/or Westfield
22	House Pump Units	$2700	$ 59,400	35 years	$ 25,500	Homes that are along edge of Pond and below gravity sewer
80	Abandon Septic Tanks	$ 200	$ 16,000	50 years	$ 10,000	
TOTAL CONSTRUCTION COST :			$ 940,000			
RESIDUAL VALUE AT YEAR 20:					$ 488,500	
SITES AND EASEMENTS:			$ 13,000		$ 13,000	
COST SHARE OF WFLD. WWTF:			$ 100,000		0	
CONTINGENCIES:			$ 94,000		$ 56,000	10% of Construction Cost
ENGINEERING(design and construct)			$ 140,000		$ 84,000	15% of Construction Cost
TOTAL CAPITAL COST:			$1,287,000		$ 641,000	
ANNUAL O&M COST:			$ 10,000			
PRESENT WORTH PER PRESENT D.U.E.			$ 9,530			
PRESENT WORTH PER FUTURE D.U.E.			$ 7,990			
PRESENT WORTH (20 yrs., 7 1/8%)			$1,230,000			All costs in this table based on Mar. 5, 1981 ENR Const. Cost Index = 3,388

ADVANTAGES OF OPTION "B-1"

This Option presents a permanent solution to the pollutional problems in the priority area. Homes would no longer face the possibility of condemnation due to the inability of physical lot limitations to support adequate subsurface systems. Individual "on-site" water supplies would not be endangered, and Pequot Pond, itself, would no longer be susceptible to continued accelerated eutrophication due to the marginal or failing septic systems in this area.

This Option would utilize the Westfield interceptor and treatment systems which are designed with capacity for this area of Southampton.
The inherent problems associated with a separate treatment facility would be circumvented.

DISADVANTAGES OF OPTION "B-1"

A primary disadvantage of this Option in the past was the uncertainty surrounding a completion date for the Arm Brook Interceptor. That project is now in the final design stage, however, and should be available for use in 1980 or 1981.

The design involves minimum slopes for the gravity collector sewers due to the flat topography in this area. Periodic maintenance problems can be expected due to accumulated solids in these pipes. Also, this gravity piping would require deep trenching in the high water table area near the Pond. Some homes, particularly those immediately adjacent to the Pond, are below the practical invert elevations of the proposed collector sewers and would have to pump their wastewater up to the system. Also, the small area (20 to 30 homes) of this neighborhood in the Westfield jurisdiction would be beyond the reach of the gravity system. A lift station or pressure system would be required to enter the proposed Southampton gravity sewerage system.

6.4.7. Option "B-2", Pequot Pond Area - Regional Solution Pressure Sewers

Option "B-2" would provide each structure in the service area with a grinder pump unit which would discharge to a proposed pressure sewer collector system. This collector system would transport the effluent to a point at the north end of the Pond. A pressure interceptor would then lead from there to a gravity interceptor, which would, in turn, discharge to the Arm Brook Interceptor in Westfield for treatment at the Westfield WWTF. The Arm Brook Interceptor should be completed in 1982 and has design capacity for the entire Pequot Pond vicinity in both Southampton and Westfield.

This Option is similar to Option "B-1", Section 6.4.6. The discussion there, concerning the opportunity for accepting flows from other Pequot Pond neighborhoods in both Southampton and Westfield, applies to this Option as well. The area of service encompassed by this Option is basically the same as was described in Option "B-1". Option "B-2" provides service to some additional homes (presently approximately 35 homes) in the Eastern Pond neighborhood, since the restrictive

minimum slope requirements of a gravity system do not apply to this Option. This type of system also offers the benefit of service to the homes along Pequot Road and Cottage Avenue; an opportunity not feasible with the force main in Option "B-1".

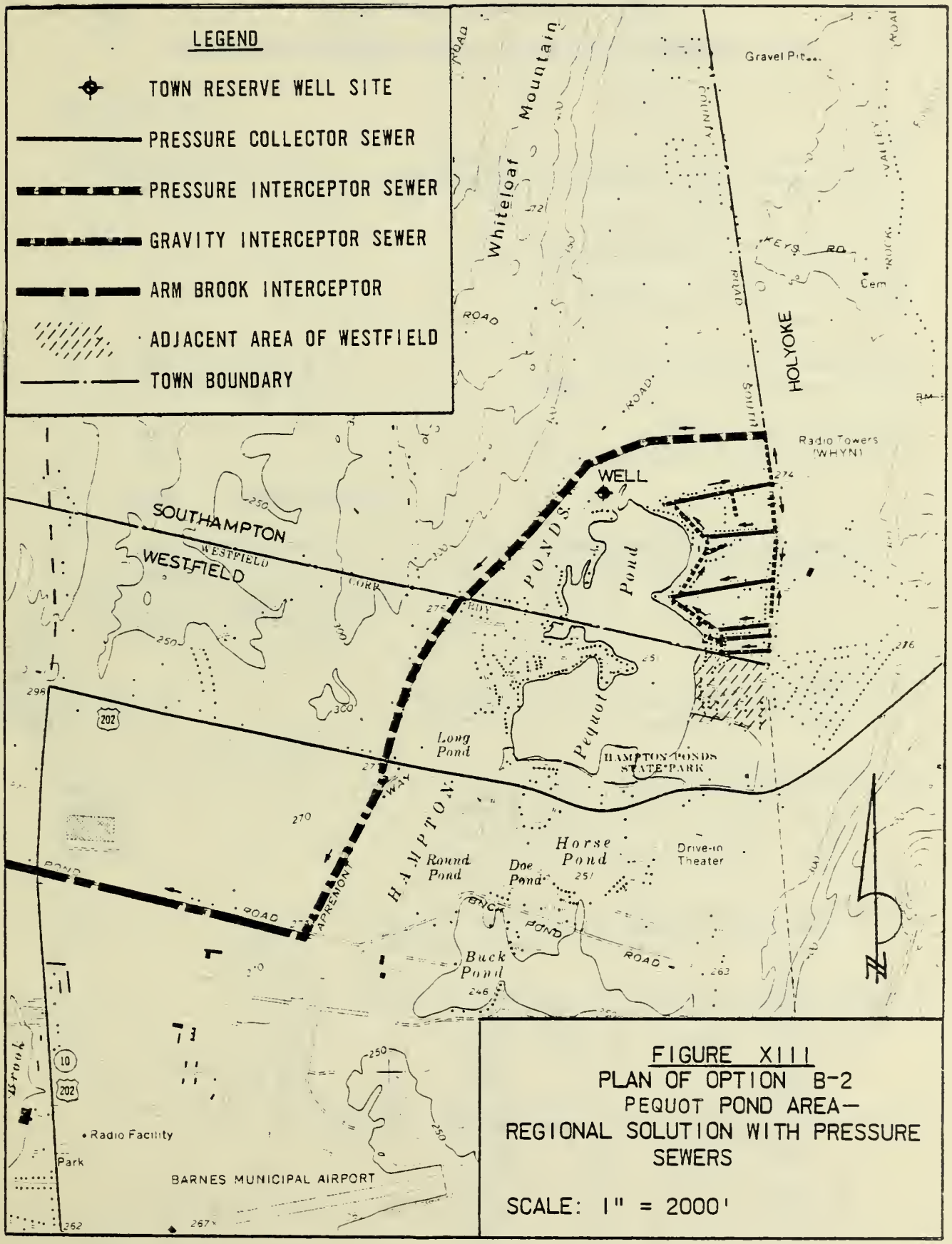


FIGURE XIII
PLAN OF OPTION B-2
PEQUOT POND AREA—
REGIONAL SOLUTION WITH PRESSURE SEWERS

SCALE: 1" = 2000'

TABLE 20

DESIGN CRITERIA - OPTION "B-2"

PEQUOT POND AREA - REGIONAL SOLUTION WITH PRESSURE SEWERS

A.

SOURCE		AVG. FLOW (GPD)
1. Homes at Pond & Pequot Rd., Southampton 144 Homes X 2.5 people/home x 70 gpd/capita		25,200
2. Bleumer Road Fire Station 3 persons @ 15 gal/person/day		45
3. Aloha Snack Bar (Seasonal) 15 seats @ 10 gal/seat/day		150
4. Mahoney's Package Store 35 persons @ 3 gal/person/day		105
5. Camp Jahn (Seasonal) 250 persons @ 20 gal/person/day		5,000
	PRESENT TOTAL	30,500
6. Future - 64 additional homes 64 x 2.5 x 70 gal/person/day		11,200
	FUTURE TOTAL	41,700

B. Peak Flows

1. Peak Flows (Present) (3.0 x Average) = 91,500 GPD(65 GPM)
2. Peak Flows (Future) (3.0 x Average) = 125,100 GPD(85 GPM)

C. Organic Considerations

1. BOD^5 (Present): 0.031 @ 340 mg/l = 88#/day
2. BOD^5 (Future) : 0.042 @ 340 mg/l = 120#/day
3. TSS (Present): 0.031 @ 430 mg/l = 110#/day
4. TSS (Future) : 0.042 @ 430 mg/l = 150#/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present) 163 D.U.E.
2. Equivalent Dwelling Units Served (Future) 227 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

Present: 163 D.U.E. x 1.0 GPM*/D.U.E. 163 GPM(0.235 MGD)
Future : 227 D.U.E. x 0.9 GPM*/D.U.E. 204 GPM(0.294 MGD)

*Head controlled output of all pumps operating together.

TABLE 21

COST EVALUATION

OPTION "B-2", PEQUOT POND AREA - REGIONAL SOLUTION WITH PRESSURE SEWERS

QUANTITY		ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YEAR 20	REMARKS
5,800	LF	2" PVC	$14	$ 81,200	50 years	$ 48,700	
4,400	LF	3" PVC	$15	$ 66,000	50 years	$ 39,600	
3,600	LF	4" PVC	$16	$ 57,600	50 years	$ 34,600	
8,700	LF	5" PVC	$18	$ 156,600	50 years	$ 94,000	
16	EA	Air Relief Valves	$210	$ 3,400	35 years	$ 1,400	
75	EA	Clean out Stuctures	$260	$ 19,500	50 years	$ 11,700	
18	EA	Valves with Boxes	$650	$ 11,700	35 years	$ 5,000	
163	EA	House Pump Units	$2700	$ 440,000	35 years	$ 190,000	
2,700	LF	12" @ 15-25'	$65	$ 175,500	50 years	$ 105,000	Could share cost with Westfield
80	EA	Abandon Septic Tanks	$200	$ 16,000	50 years	$ 10,000	
TOTAL CONSTRUCTION COST:				$1,027,000			
RESIDUAL VALUE AT YEAR 20:						$ 540,000	
SITES AND EASEMENTS:				$ 6,000		$ 6,000	
COST SHARE OF WFLD WWTF:				$ 100,000		0	
CONTINGENCIES:				$ 103,000		$ 62,000	10% of Construction Cost
ENGINEERING:				$ 154,000		$ 92,000	15% of Construction Cost
TOTAL CAPITAL COST:				$1,390,000		$ 700,000	
ANNUAL O & M COST:				$ 14,000			
PRESENT WORTH PER PRESENT D.U.E.:				$ 8,340			
PRESENT WORTH PER FUTURE D.U.E.:				$ 6,000			
PRESENT WORTH:				$1,360,000			

All costs in this report based on Mar. 5, 1981
ENR Const. Cost Index = 3388

ADVANTAGES OF OPTION "B-2"

This Option is among the most cost-effective in terms of Total Capital Cost per Dwelling Unit Equivalent served, both present and future. The pressure sewer system also inherently allows service to homes below the elevation of the sewer, such as those near the Pond's edge.

The freedom from the constraints of gravity design allows the expansion of the collector system to serve all of the homes in the problem area, unlike Option "B-1", which could not reach some of the less critical dwellings without the addition of pumping units.

This Option also allows the homes along Pequot Pond and Cottage Avenue, on the western side of Pequot Pond, to connect directly to the pressure interceptor. This would not be possible with the force main in Option "B-1" unless another pumping station were to be constructed.

The pressure and gravity regional interceptor combination provides the opportunity for sewering

other areas around the Pond in both Southampton and Westfield. The question of a joint inter-municipal solution of this sort has been raised by the Lower Pioneer Valley Regional Planning Commission since, logically, the western and southern sides of the Pond constitute a single physical area (although divided by the City-Town Boundary).

The small adjacent residential area in Westfield that is a part of the eastern Pond study area could install an extension of the proposed pressure sewer collector system and utilize the regional interceptor.

This Option provides a permanent solution to the disposal problems in this area, while utilizing an existing treatment facility, thus eliminating the need for another treatment plant with its attendant requirement of sludge handling, etc.

DISADVANTAGES OF OPTION "B-2"

The O&M of the grinder pump units was once a major drawback to systems of this type. More recently, however, modern equipment has eliminated this stigma.

6.4.8 Option "B-3", Pequot Pond Area - Subsurface Disposal with Pressure Sewers

This Option would install a pressure sewer collection system identical to that in Option "B-2". Note that a cost evaluation comparison of Options "B-1" and "B-2" shows the pressure collection system to be more cost-effective than a gravity system for this area; hence, the selection of the former for use in this Option "B-3".

The collected effluent would be transported via a pressure interceptor to a treatment and disposal site west of Pequot Road where the soils consist of the Hinckley-Windsor-Merrimac Association; a soils group highly compatible with subsurface disposal.

A local treatment plant, at the Pequot Road site, would discharge to alternating dosing chambers which would cyclically feed leaching beds of conventional construction. The tentative site for this disposal system has been chosen in accordance with research of soil types, land uses, topography, etc., performed during the preparation of this report.

However, as described before, State Regulations require substantial further study and field testing prior to final selection of a site for the land disposal of flows in excess of 15,000 GPD. This further study must include expensive and time consuming geo-hydrological field analysis of the site.

The development of a local treatment plant discharging into Pequot Pond was not considered a feasible approach, since discharges of treated sewage into lakes or ponds is not practiced in Massachusetts. The acknowledged accelerated eutrophic condition of Pequot Pond also casts doubt on the wisdom of such a solution.

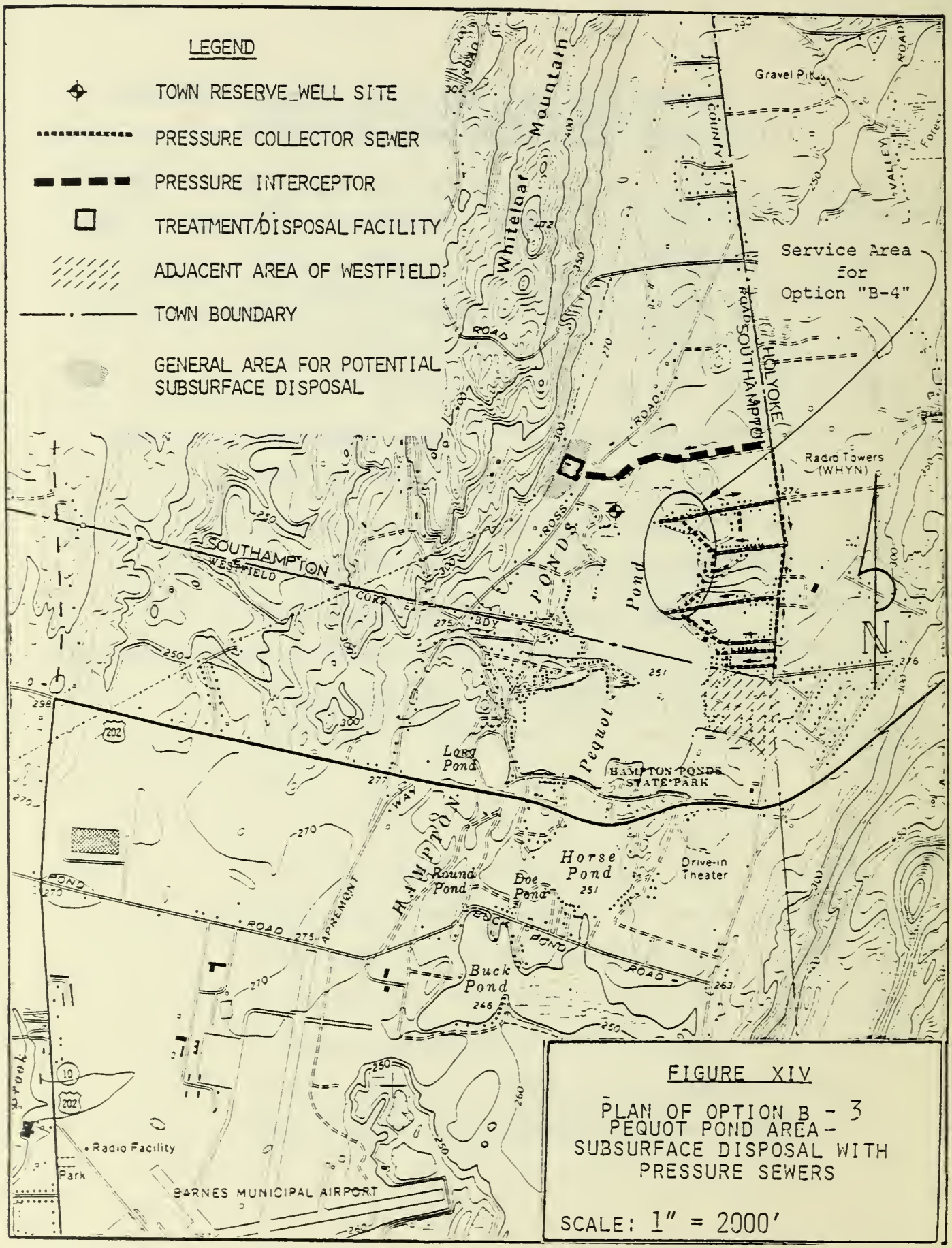


FIGURE XIV

PLAN OF OPTION B - 3
PEQUOT POND AREA -
SUBSURFACE DISPOSAL WITH
PRESSURE SEWERS

SCALE: 1" = 2000'

TABLE 22

DESIGN CRITERIA - OPTION "B-3"

PEQUOT POND AREA - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

A. SOURCE	AVG. FLOW (GPD)
1. Homes at Pond 131 homes x 2.5 people/home x 70 gpd/capita	22,925
2. Bleumer Road Fire Station 3 persons @ 15 gal/person/day	45
3. Aloha Snack Bar (Seasonal) 15 seats @ 10 gal/seat/day	150
4. Mahoney's Package Store 35 persons @ 3 gal/person/day	105
5. Camp Jahn (Seasonal) 250 persons @ 20 gal/person/day	5,000
PRESENT TOTAL:	28,225
6. Future - 40 additional homes 40 x 2.5 x 70 gal/person/day	7,000
FUTURE TOTAL:	35,225

B. Peak Flows	
1. Peak Flows (Present) (3.0 x Average) =	84,600 GPD(60 GPM)
2. Peak Flows (Future) (3.0 x Average) =	105,675 GPD(75 GPM)
C. Organic Considerations	
1. BOD^5 (Present) 0.028 @ 340 mg/l =	80#/day
2. BOD^5 (Future) 0.035 @ 340 mg/l =	99#/day
3. TSS (Present) 0.028 @ 430 mg/l =	100#/day
4. TSS (Future) 0.035 @ 430 mg/l =	125#/day
D. Equivalent Dwelling Units	
1. Equivalent Dwelling Units Served (Present)	150 D.U.E.
2. Equivalent Dwelling Units Served (Future)	190 D.U.E.
E. Peak Flow Rate Resulting from Grinder Pump Units	
Present: 150 D.U.E. x 1.0 GPM/D.U.E.*	150 GPM(0.216 MGD)
Future: 190D.U.E.X 0.9GPM/D.U.E.*	171 GPM(0.246 MGD)

*Head controlled output of all pumps operating together.

TABLE 23

COST EVALUATION

OPTION "B-3", PEQUOT POND AREA - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YR. 20	REMARKS
5,800 LF	2" PVC	$14	$ 81,200	50 Yrs.	$ 48,700	
4,400 LF	3" PVC	$15	$ 66,000	50 Yrs.	$ 39,600	
3,600 LF	4" PVC	$16	$ 57,600	50 Yrs.	$ 34,600	
3,200 LF	5" PVC	$18	$ 57,600	50 Yrs.	$ 34,600	
14 EA	Air Relief Valves	$210	$ 2,940	35 Yrs.	$ 1,300	
64 EA	Clean Out Struct's	$260	$ 16,600	50 Yrs.	$ 10,000	
16 EA	Valves w. Boxes	$650	$ 10,400	35 Yrs.	$ 4,500	
150 EA	House Pump Units	$2700	$ 405,000	35 Yrs.	$ 173,600	
30,000 GPD	Trmt. Plant	--	$ 160,000	20 Yrs.	$ 0	
	Plant Bldg.	--	$ 32,000	50 Yrs.	$ 19,200	
3 EA	Dosing Chamber	$15000	$ 45,000	50 Yrs.	$ 27,000	
30,000 SF	Leaching Beds	$2	$ 60,000	20 Yrs.	$ 0	
100 EA	Abandon Septic Tanks	$200	$ 20,000	50 Yrs.	$ 12,000	
TOTAL CONSTRUCTION COST:			$1,014,400			
RESIDUAL VALUE AT YEAR 20:					$ 105,100	
SITES & EASEMENTS:			$ 46,000		$ 46,000	
CONTINGENCIES:			$ 101,000		$ 61,000	10% of Construction
ENGINEERING:			$ 212,000		$ 127,000	includes geo-hydrologic study
TOTAL CAPITAL COST:			$ 1,373,000		$ 639,000	
ANNUAL O & M COST:			$ 19,000			
PRESENT WORTH PER PRESENT D.U.E.:			$ 9,400			
PRESENT WORTH PER FUTURE D.U.E.:			$ 7,400			
PRESENT WORTH:			$ 1,410,000			All costs in this table based on Mar. 5, 1981 ENR Construction Cost Index = 3388

ADVANTAGES OF OPTION "B-3"

The pressure collector sewer system has the advantages already discussed in Option "B-2". The operation and maintenance costs could be shared with the Town Center area if the pressure sewer regional Option ("A-5") or the pressure sewer/ subsurface disposal Option ("A-4") were to be implemented.

This Option allows a significant portion of the future system expansion costs (that of the grinder pump units) to be charged directly to the user in the case of future home connections. In most cases, the pressure collectors employed for expansion would be those already installed to service the existing homes as a portion of this project.

DISADVANTAGES OF OPTION "B-3"

If, in the future, a regional approach does become the ultimate solution here, the investment associated with the subsurface disposal system and the treatment facility would be lost except for their salvage value.

6.4.9 Option "B-4" Limited Pequot Pond Area - Subsurface Disposal with Pressure Sewers

Option "B-4" is similar to Option "B-3" but serves only those homes in the Pond Area identified by the Town Board of Health as currently having the most pressing subsurface disposal problems. Reducing the flow to the 15,000 gpd State standard permits the direct subsurface discharge of effluent without the need for intermediate treatment; thus the sewage treatment plant, necessary as a part of Option "B-3," is not required.

The area serviced by this option is depicted on Figure XIV (pg. 123) by the ellipse near the word "Pond."

ADVANTAGES AND DISADVANTAGES OF OPTION "B-4"

The advantages and disadvantages of this option are essentially the same as those reported for Option "B-3."

This option does, however, have one additional advantage and disadvantage when compared to Option "B-3," caused by the reduction in flow: the need for a sewage treatment plant is eliminated, saving both capital and O & M costs, but the ability of the system to expand is severely limited.

TABLE 24
DESIGN CRITERIA - OPTION "B-4"
LIMITED PEQUOT POND AREA - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

A. SOURCE	AVG. FLOW (GPD)
1. Homes at Pond 32 homes x 2.5 people/home x 70 gpd/capita	5,600
2. Camp Jahn (seasonal) 250 persons @ 20 gal/person/day	5,000
PRESENT TOTAL:	10,600
3. Future - 25 additional homes 25 x 2.5 x 70 gal/person/day	4,375
FUTURE TOTAL:	14,975

B. Peak Flows
1. Peak Flows (Present) (3.0 x Average) = 31,800 GPD (20 GPM)
2. Peak Flows (Future) (3.0 x Average) = 44,925 GPD (30 GPM)

C. Organic Considerations
1. BOD5 (Present) 0.011 @ 340 mg/l = 31#/day
2. BOD5 (Future) 0.015 @ 340 mg/l = 42#/day
3. TSS (Present) 0.011 @ 430 mg/l = 39#/day
4. TSS (Future) 0.015 @ 430 mg/l = 54#/day

D. Equivalent Dwelling Units
1. Equivalent Dwelling Units Served (Present) 47 D.U.E.
2. Equivalent Dwelling Units Served (Future) 72 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units
Present: 47 D.U.E. x 1.0 GPM/D.U.E.* 47 GPM (0.07 MGD)
Future: 72 D.U.E. x 0.9 GPM/D.U.E.* 65 GPM (0.09 MGD)

*Head controlled output of all pumps operating together.

TABLE 25

COST EVALUATION

OPTION "B-4," LIMITED PEQUOT POND AREA - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

QUANTITY	ITEM	UNIT $	COST	LIFE	RESIDUAL VALUE @ YR. 20	REMARKS
1,250 LF	2" PVC	$ 14	$ 17,500	50 years	$ 10,500	
3,000 LF	4" PVC	$ 16	$ 48,000	50 years	$ 28,800	
1,000 LF	5" PVC	$ 18	$ 18,000	50 years	$ 10,800	
8 EA	Air Relief Valves	$ 210	$ 1,680	35 years	$ 720	
40 EA	Clean-out Structs	$ 260	$ 10,400	50 years	$ 6,240	
8 EA	Valves with Boxes	$ 650	$ 5,200	35 years	$ 2,230	
35 EA	House Pump Units	$2700	$ 94,500	35 years	$ 40,500	
	Dosing Chambers, Septic Tanks, etc.	L.S.	$ 45,000	50 years	$ 27,000	
12 EA	Leaching Pits	$2500	$ 30,000	20 years	0	
35 EA	Abandon Septic Tanks	$ 200	$ 7,000	50 years	$ 4,000	
TOTAL CONSTRUCTION COST:			$277,000			
RESIDUAL VALUE AT YEAR 20:					$130,000	
SITES AND EASEMENTS:			$ 30,000		$ 30,000	
CONTINGENCIES:			$ 28,000		$ 17,000	
ENGINEERING:			$ 42,000		$ 25,000	
TOTAL CAPITAL COST:			$377,000		$202,000	
ANNUAL O & M COST:			$ 7,000			
PRESENT WORTH PER PRESENT D.U.E.:			$ 8,510			
PRESENT WORTH:			$400,000			

All costs in this table are based on Mar. 5, 1981 ENR Construction Cost Index of 3388.

7. PLAN SELECTION

7. PLAN SELECTION

7.1 Views of Public and Concerned Interests on Options

The recommended plan represents a consensus of the opinions and recommendations of the Town's citizens and appropriate Town Boards.

A public hearing was held on April 15, 1981 and continued on April 29, 1981 at 7:30 p.m. at the Southampton Town Hall. The various options for resolving the existing sewage related problems in the Town Center and Ponds areas were presented to the residents together with the environmental and social effects, the locations, areas of service, and monetary costs of those plans found by this study to be most viable. Summaries of these meetings are included as Appendix C to this report.

Notification of the hearing was sent to the agencies listed below. No responses were received.

1. Massachusetts Division of Water Pollution Control, Boston
2. Lower Pioneer Valley Regional Planning Commission
3. U.S. Environmental Protection Agency, Boston
4. Massachusetts Department of Environmental Quality Engineering, Amherst

Public meetings concerning either Town Center or Pequot Pond were held on March 5, April 9, and June 2, 1980 and February 9, March 30, and April 6, 1981.

7.2 Evaluation and Ranking of Proposals

The alternatives for servicing the Town Center and Pond areas differ in three ways:

1.) Type of collection system - gravity vs. pressure;

2.) Type of disposal system - regional vs. local;

3.) Area of service - limited vs. area-wide.

The alternatives were evaluated with respect to direct monetary costs, environmental impacts, operational considerations, energy efficiency, flexibility, social impact, etc.

The alternatives for each area are listed below.

Identification	Area of Service	Type of Collection System	Type of Disposal System
Town Center:			
A-1	Area-Wide	Gravity	Regional
A-2	Town Center	Gravity	STP & Discharge
A-3	Town Center	Gravity	STP & Leach Field
A-4	Town Center	Pressure	STP & Leach Field
A-5	Area-Wide	Pressure	Regional
A-6	Limited Town Ctr.	Pressure	Leach Field

Ponds Area:

B-1	Area-Wide	Gravity	Regional
B-2	Area-Wide	Pressure	Regional
B-3	Pond Area	Pressure	STP & Leach Field
B-4	Limited Pond Area	Pressure	Leach Field

Some important characteristics of each are listed in Table 26 (next page).

The Town considers Option A-6, a pressure collector system discharging to a leach field servicing a limited area of Town Center and Option B-2, a pressure collector system discharging to the City of Westfield sewerage system servicing most of the eastern Ponds area as the two alternatives that best met the Town's needs.

Option A-6 has the lowest Total Present Worth and services only that area of Town Center that, according to the Town Board of Health, has the current most pressing public health problems. Options A-1 and A-5 have considerably higher Total Present Worths and have the potential to encourage unwanted growth along the route of the long interceptor into Easthampton. The Total Present Worths of Options A-2, A-3 and A-4 are also greater than that of Option A-6; in addition, Option A-2 is not feasible since it requires a direct discharge into a stream having a relatively low flow.

TABLE 26
COMPARISON OF OPTIONS

OPTION	UNITS SERVED (PRESENT)	TOTAL CAPITAL COST	ANNUAL O & M COST	TOTAL PRESENT WORTH	TOTAL PRESENT WORTH PER UNIT SERVED
Town Center:					
A-1	348	$2,040,000	$25,000	$2,027,000	$ 5,800
A-2	96	$ 922,000	$13,000	$ 961,000	$10,000
A-3	96	$1,245,000	$15,000	$1,287,000	$13,400
A-4	117	$1,408,000	$19,000	$1,465,000	$12,500
A-5	366	$2,225,000	$32,000	$2,274,000	$ 6,210
A-6	73	$ 863,000	$ 9,000	$ 858,000	$11,750
Ponds Area:					
B-1	129	$1,287,000	$10,000	$1,230,000	$ 9,530
B-2	163	$1,390,000	$14,000	$1,360,000	$ 8,340
B-3	150	$1,373,000	$19,000	$1,410,000	$ 9,400
B-4	47	$ 377,000	$ 7,000	$ 400,000	$ 8,510

NOTE: All construction costs based on March 5, 1981 ENR Index of 3388. Present worths calculated for 20 years, 7 1/8% discount rate.

Option B-2 was selected even though it has the second greatest Total Present Worth of the four Pond options. It does, however, have the lowest Total Present Worth per Unit Served and, most importantly, best supports a regional approach to solving the problems of the entire Ponds area, including those sections within the City of Westfield and the City of Holyoke. Under B-2 the sewage is transported completely out of the drainage area for the Ponds, another advantage.

7.3 Selected Plan

Based on the opinions of the Town's citizens and governing Boards, the cost-effectiveness analysis, and a consideration of environmental concerns, the pressure sewer-leach field system servicing a limited area of Town Center and the pressure sewer-regional disposal system servicing the eastern shore of Pequot Pond are recommended as the most suitable solutions to the existing water pollution control problems in Southampton.

8. PRELIMINARY DESIGN

8. PRELIMINARY DESIGN

8.1 Town Center and Ponds Collection Systems

Approximately 40,000 linear feet of small diameter pressure sewer piping and 3,000 linear feet of 12-inch gravity sewer pipe will be installed, most under existing roads and streets. The system will include cleanout structures, shut-off valves, and air relief valves.

Existing septic tanks will be pumped out and filled with suitable material to avoid future safety problems. The grinder pump units will be installed outside the buildings, in individual watertight "manholes." It may be possible to "cluster" up to three dwelling units around a single grinder unit rather than provide a separate unit for each dwelling unit. During the design phase consideration will also be given to powering the grinder pump units from a central source rather than rely on each home's electrical system.

The grinder pumps will be owned and maintained by the Town; service easements will be obtained when the facilities are on private property.

A typical grinder pump configuration is depicted in Figure XV.

The sewage flowing from Southampton into the Westfield system will be metered at the Town-City boundary.

8.2 Town Center Leach Field

The exact location of the disposal site for the Town Center option will be determined during the design phase of the project, since it is more appropriate to perform the required detailed geo-hydrologic work at that time. However, enough general data exists to enable us to identify two areas appropriate for the site (see Figure XI-A).

Groundwater conditions are favorable at both sites and percolation rates (determined by field tests) are about 2 minutes/inch.

Based on this information, the expected 16,000 gpd flow and the requirements of Title V of the State Sanitary Code, the following preliminary design concepts are considered appropriate:

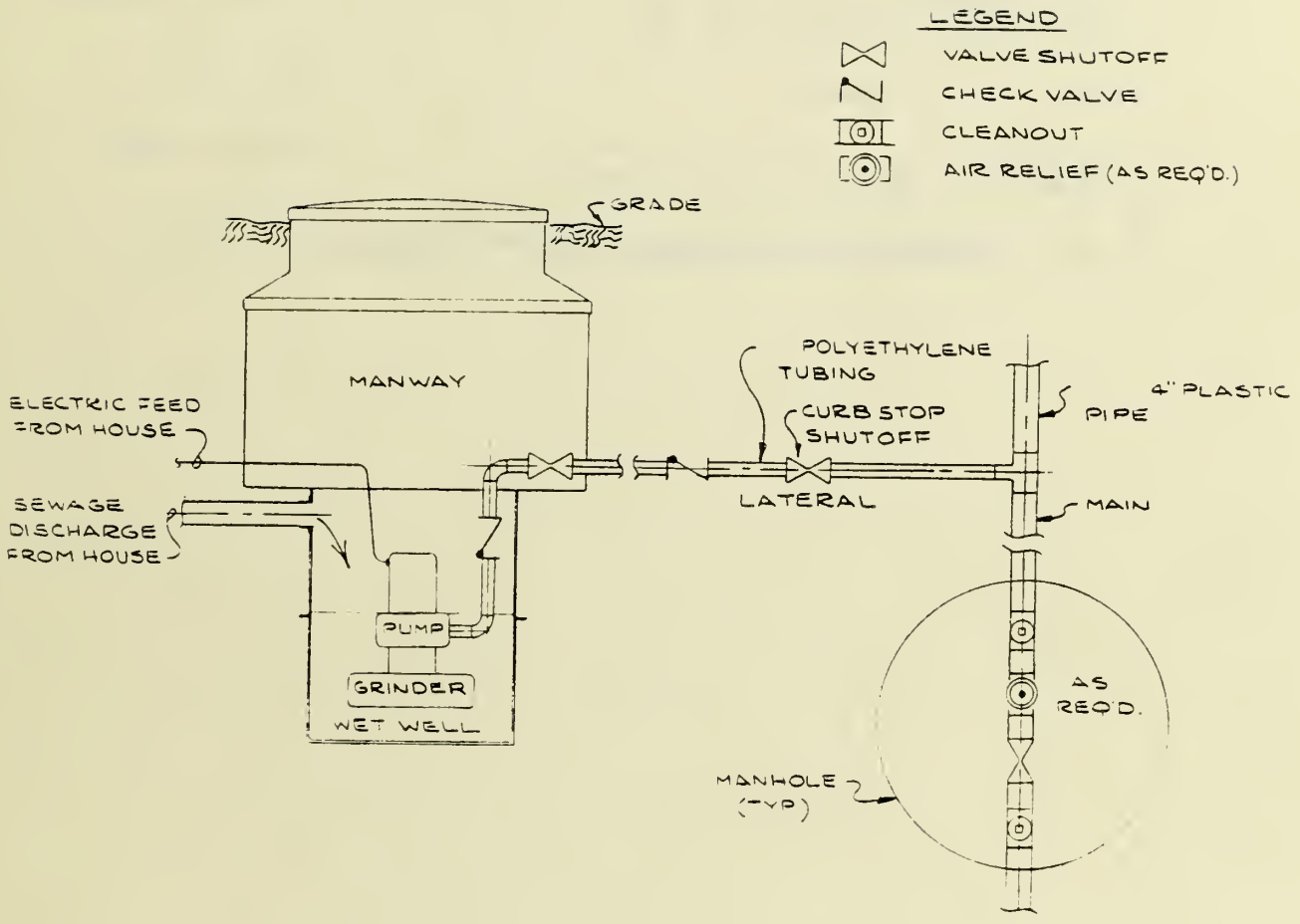


Figure XV - Typical Grinder Pump Configuration

Almer Huntley Jr. & Assocs. Inc.
Surveyors - Engineers - Planners
125 Pleasant St. P. O. Box 568
NORTHAMPTON, MA 01060

Pressure Sewer Distribution Box	One each
Size of Septic Tank (150% x 16,000 gpd) = Use two 12,000 gallon tanks, each 10' x 11' x 25'	24,000 gallons
Grease Traps = Use two, each 6' x 6' x 11'	1,500 gallons
Siphon Chambers = Use three, each 7' x 13'	1,000 gallons
Distribution Boxes	Six each
Leaching Pits Each 10' deep by 14' diameter	Twelve each
Total land required including buffer zone =	Two acres

9. ARRANGEMENTS FOR IMPLEMENTATION

9. ARRANGEMENTS FOR IMPLEMENTATION

9.1 Institutional Responsibilities

The Town of Southampton, Massachusetts, which will operate the proposed sewerage systems, has the legal authority and financial capability to construct and operate the proposed facilities. A copy of the Resolution of Intent of the Board of Selectmen to construct and operate the proposed facilities is attached as a part of Appendix B.

An assurance of compliance with Title VI of the Civil Rights Act of 1964 is also attached as part of Appendix B.

9.2 Operation and Maintenance

A Plan of Operation and an Operation and Maintenance Manual will be prepared providing for staffing, management, training, and sampling and analysis for effective operation and maintenance of the facility. A State-certified operator will be required on a part-time basis for the Town Center system, perhaps being "shared" with a nearby Town, to operate and maintain the facility.

9.3 Financial Requirements

EPA Form 5700-32 is attached as a part of Appendix B.

The cost of implementing the program recommended in this Plan, divided into State and Federal grant eligible and ineligible portions, is summarized in Tables 27, 28 and 29, following.

The Town's share of the cost of the project will be reduced significantly by State and Federal grants, in amounts of from 40% to 94% of the eligible cost of the sewer system and 90% to 94% of the eligible cost of the disposal facility. It is difficult to predict at this time the exact amount of the aid because of the complex and often subjective nature of the grants process; such a determination is typically made by the State and Federal government during processing of the Step 3 (construction) grant application.

The primary basis for the uncertainty in this analysis lies with whether or not the pressure sewer systems recommended in this report qualify for the higher funding that can be offered under EPA's Alternative/Innovative Technology Program.

TABLE 27
ESTIMATED COST OF PROJECT
TOWN CENTER

Item	Total	Cost Eligible	Cost Ineligible
Construction & Contingency			
Sewers	$610,000	$610,000	$ 0
Disposal Facility	120,000	120,000	0
Engineering			
Sewers	84,000	84,000	0
Disposal Facility	16,000	16,000	0
Sites & Easements			
Sewers	18,000	0	18,000
Disposal Facility	15,000	15,000	0
Interest During Construction	40,000	0	40,000
Administrative, Legal, Financial	10,000	0	10,000
TOTAL	$913,000	$845,000	$68,000

TABLE 28
ESTIMATED COST OF PROJECT
PEQUOT POND

Item	Total	Cost Eligible	Cost Ineligible
Construction & Contingency			
Collector Sewers	$765,000	$765,000	$ 0
Interceptor Sewers	365,000	365,000	0
Westfield WWTP	100,000	0	100,000
Engineering			
Collector Sewers	105,000	105,000	0
Interceptor Sewers	50,000	50,000	0
Sites & Easements			
Sewers	6,000	0	6,000
Interest During Construction	50,000	0	50,000
Administrative, Legal, Financial	10,000	0	10,000
TOTAL	$1,451,000	$1,285,000	$166,000

TABLE 29
ESTIMATED COST OF PROJECT
TOTAL PROJECT
TABLE 27 + TABLE 28

Item	Total	Cost Eligible	Cost Ineligible
Construction & Contingency			
Collector Sewers	$1,375,000	$1,375,000	$ 0
Interceptor Sewers	365,000	365,000	0
Disposal Facility	120,000	120,000	0
Westfield WWTP	100,000	0	100,000
Engineering			
Collector Sewers	189,000	189,000	0
Interceptor Sewers	50,000	50,000	0
Disposal Facility	16,000	16,000	0
Sites & Easements			
Sewers	24,000	0	24,000
Disposal Facility	15,000	15,000	0
Interest During Construction	90,000	0	90,000
Administrative, Legal, Financial	20,000	0	20,000
TOTAL	$2,364,000	$2,130,000	$234,000

Because of this all Town costs will be presented in this report as a range of costs; these costs are summarized in Table 30.

The Town's share of the capital cost of the project ranges from $379,000 to $1,305,000.

The Town has not yet determined how the cost of the project will be distributed but as one extreme we can assume that the user will be assessed as much of the cost as is legally possible. Certain costs, however, may appear on the tax rate: interest during construction, $90,000 (cannot be bonded for under Massachusetts General Law); the Town's share of the cost of the Septage Truck, $3,200 (will be used to pump the tanks of individuals not on the system; and the Town's share of the cost of servicing Town Facilities.

To determine a "per user" cost it is necessary to first determine the total number of assessable "units." Based on the number of sources reported for Options A-6 and B-2, the number of "present" users total 236, with 223 (95%) representing private and commercial facilities and 13 (5%) representing Town facilities.

TABLE 30
TOWN SHARE OF PROJECT COSTS

	Town Share	
	Minimum Aid	Maximum Aid
Construction & Contingency		
Collector Sewers	$ 825,000 (60%)	$ 82,500 (6%)
Interceptor Sewers	36,500 (10%)	36,500 (10%)
Disposal Facility	12,000 (10%)	7,200 (6%)
Westfield WWTP	100,000 (100%)	100,000 (100%)
Engineering		
Collector Sewers	189,000 (100%)	11,300 (6%)
Interceptor Sewers	5,000 (10%)	5,000 (10%)
Disposal Facility	1,600 (10%)	1,000 (6%)
Sites & Easements		
Sewers	24,000 (100%)	24,000 (100%)
Disposal Facility	1,600 (10%)	1,000 (6%)
Interest During Construction	90,000 (100%)	90,000 (100%)
Administrative, Legal, Financial	20,000 (100%)	20,000 (100%)
TOTAL	$1,304,700	$378,500

Note: The percentages in parentheses represent the Town's share of the Total Item Cost.

To summarize, although the Town has not yet determined how the cost of the system will be distributed we can assume the extreme case of the user paying as much as is legally possible - paying all Town costs except interest during construction, the cost of the Septage Truck, and the cost of servicing Town facilities. These three costs may appear on the tax rate and may be borne by all property taxpayers (both system user and non-user).

The total capital cost assessable per private or commercial unit may range from $1,220 to $5,160 while the capital cost assessable against the tax rate may range from $110,000 to $160,000.

The yearly unit capital cost, assuming a 5%, 40-year U.S. Farmers Home Administration Loan, may range from $70 to $300 plus the increase in the tax rate attributable to the project.

Operation and maintenance costs, totalling $23,000 per year, may also be apportioned among users and non-users (with non-users assessed a portion of the cost of servicing Town facilities). The yearly private and commercial O & M cost is estimated as $100 with $1,150 paid for by the

entire Town through increased property taxes.

Total yearly unit costs (capital and O & M) for users may range from $170 to $400 plus the amount placed on the tax rate.

At this time the Town intends to apply for a U.S. Farmers Home Administration loan to finance the Town's share of the capital cost of the project.

9.4 Implementation Schedule

Submit Plan to Mass. DWPC for Review	July, 1981
Plan Approved, Step 2 Design Grant Offered	Jan., 1982
Submit Design Drawings to Mass. DWPC for Review	Jan., 1983
Drawings Approved, Step 3 (Construction) Grant Offered	June, 1983
Project Advertised	July, 1983
Construction Begins	Oct., 1983
Construction Complete	July, 1985

10. ENVIRONMENTAL ASSESSMENT

10. ENVIRONMENTAL ASSESSMENT

10.1 Existing Environmental Conditions Without Project

Planning Area

The Town of Southampton is approximately 29 square miles in area and is located along Route 10 in Hampshire County, Western Massachusetts. It is bordered by Westhampton and Easthampton to the north, Easthampton and Holyoke to the east, Westfield to the south, and Montgomery and Huntington to the west. It is situated approximately 20 miles northwest of Springfield, Massachusetts and 100 miles west of Boston.

Topography and Soils

The majority of the Town is located in the Connecticut River Basin and drains via the Manhan River. A small portion in the southeastern corner of Town drains to the Westfield River via Pequot Pond and Pond Brook. The rolling topography here is characterized by moderate inclines in most populated areas (circa 200' elev., m.s.l.), interspersed with hills of 400' to 500' elevation. The topography rises quickly in the northwest with steep, rugged slopes to the 1,160' elevation at the top of Pomeroy Mountain. The soils in the east are a mixture of many types, while in the west it is mostly rough and stony. Soils in Southampton are generally considered to be unsuitable for on-lot sewage disposal systems with

63% of the total land area designated as having "severe limitations" for such systems, per reports published by the Lower Pioneer Valley Regional Planning Commission (LPVRPC). Where soils are known to be unsuitable, large lot zoning is presently in effect under Town Zoning Ordinances.

The Town Center priority study area consists of a somewhat impervious colloidal type of soil with a seasonally high water table, the combination of which imposes severe limitations on on-site disposal facilities. The Pond area exhibits soils of a permeable nature which, while normally suitable for subsurface disposal per se, allow unrenovated contaminants to migrate through the soil to adjacent private water supplies and, potentially, to the Pond itself.

Water Quality

The majority of the Town is a watershed contributory to the Manhan River; however, the smaller Pequot Pond environs drain to Pond Brook, a tributary of the Westfield River. Water segments within the planning area have been designated "Class B" by the Massachusetts Division of Water Pollution Control (MA-DWPC) per "Massachusetts Water Quality Standards," adopted September 1, 1978. Waters assigned to this Class are designated for the following uses: "protection and propagation of fish

and other aquatic life and wildlife; and for primary and secondary recreation."

The Manhan River exhibits a limited assimilative nature due to its low volume of flow. There is no permanent river flow gauging station located on the Manhan River in Southampton. However, the U.S. Department of the Interior did record flow data there in 1971 and 1972. This data was published in "Water Resources Data for Massachusetts, Rhode Island, Vermont and New Hampshire (1972)." These measurements were performed at the Loudville Road Bridge where the Manhan passes into Easthampton from Southampton. This point is downstream from the confluence of the North Branch with the main watercourse and, therefore, shows even higher flow rates than would be experienced at any potential municipal discharge location in Southampton's Town Center. The recorded flows are:

10 - 7 - 71	18 Cubic Feet per Second (CFS)
4 - 11 - 72	154 CFS
9 - 14 - 72	25 CFS
9 - 29 - 72	18 CFS

Potable Water

Presently, municipal water is provided to the greater Town Center vicinity, along the College Highway corridor from Valley Road to the Center of Town, and northerly to include all of College Highway older subdivisions along the way. Also included are portions

of Fomer Road, Brickyard Road, and Glendale Road. The supply inventory for this public system consists of two sources, a direct tap to one of two parallel Holyoke Water Works transmission mains that supply the neighboring City of Holyoke from the Tighe-Carmody Reservoir located in the western portion of Southampton, and a gravel developed well located adjacent to the Manhan River northwest of the intersection of College Highway with Glendale Road. This well has a Massachusetts Department of Public Health rated safe yield of 331,000 GPD, although pumping tests have established that the well is capable of producing up to 790,000 GPD. The well water and the reservoir water are not currently treated.

The Pequot Pond area is served entirely by private "on-site" water supplies, a questionable practice in an area of crowded, undersized, and often obsolete individual subsurface disposal systems. One serious concern in this area is the fact that only fifty (50) percent have deep well water supply.

A tested and proven municipal well site exists at the northern end of Pequot Pond and should be considered endangered if pollution of the Pond worsens. Plans and specifications were prepared for the installation of a new municipal water supply well at this site. Financing for the construction has not yet been obtained, and the plan has not been implemented.

Economic, Demographic and Land-Use Data

The Town of Southampton is a rural/suburban residential community located near the Springfield - Holyoke - Chicopee metropolitan area and is a part of that same Standard Metropolitan Statistical Area (SMSA). Approximately 6% of the total land area is occupied by residential, commercial, and related uses while the balance of the land is under agricultural usage or is vacant.

Southampton has little commercial or industrial activity and relies primarily on out-of-town employment opportunities. Therefore, economic conditions are influenced by the neighboring communities. Agricultural activity consists of small-scale dairy operations, an orchard, and wide-spread plots of tillage. Educational facilities consist of an elementary and a middle school in Southampton, while secondary education is shared with four other Hampshire County towns on a regional basis (Hampshire Regional School District).

The 1975 State Census population count for Southampton is 3,770. The 1970 U.S. Census showed a population of 3,069 residing in 912 housing units with a 2% vacancy rate and exhibiting a median population of 3.3 per unit.

Other Environmental Conditions

Average annual precipitation amounts to greater than 45 inches in Southampton and snow generally covers the ground from late December to mid-April. There are two (2) surface water impoundments within the Town boundaries; the larger is the Tighe-Carmody Reservoir that provides water to the City of Holyoke and is located on the Manhan River near the western town boundary. Another reservoir ("White") is located in the northwest section of Town, on the Manhan River upstream from the Tighe-Carmody site. Both reservoirs are several hundred feet higher in elevation than Southampton's residential areas and each is separated therefrom by ranges of hills. This situation precludes any possible contamination of the impoundments by the Town's wastewaters.

There are no known special environmental factors such as wetlands, flood plains, unique plant or animal communities, wildlife habitats, archeological features, air quality factors, or other factors that would be significantly affected by the waste treatment alternatives addressed herein.

Existing Treatment Systems and Wastewater Flows

The Town of Southampton presently relies solely on individual, privately owned, subsurface disposal systems.

Two areas of Town have been recognized as priority problem areas due to the general substandard performance of these systems, Town Center and Pequot Pond.

10.2 Future Environment Without the Project

General

Future conditions projected for the planning area are addressed in this section of the Environmental Assessment as they relate to and influence the water pollution control needs of the Town and the forecasted flows and waste loads. The planning period, upon which the preliminary designs are based, considers a span of 20 years beyond the anticipated initiation of operation of the proposed treatment systems.

Land Use

The residential/agricultural land use pattern in Southampton is expected to continue unchanged for the foreseeable future. Commercial and industrial growth will likely occur only on a limited scale. No uses of this sort are anticipated which would generate any substantial volumes or concentrations of waste. The limited availability of building lots along the majority of the proposed sewerage system routes would tend to negate any major effects that a municipal sewerage system might have on future residential development. Any growth in areas along the proposed sewers should be consistent with the Town's Zoning By-Laws and the projections presented in Town Water and Zoning master plans.

Demographic and Economic Projections

Population projections were developed by the Lower Pioneer Valley Regional Planning Commission (LPVRPC) as part of the requirements for a HUD 701 Land Use Study, and were adopted by that Agency's 208 Areawide Wastewater Treatment Management Plan (refer to the following Table).

TABLE

POPULATION DATA AND PROJECTIONS

Year	Population	Households
1930 (U.S. Census)	931	
1940 "	950	
1950 "	1,387	
1960 "	2,192	
1970 "	3,069	868
1975 (State Census)	3,770	
1980 (Projected)	4,410	1,400
1990 "	5,440	1,844
2000 "	6,110	2,144

The population growth of Southampton has been slow over the years until 1950, but has increased markedly and steadily since that time. Between the years of 1950 and 1960, population increased by 58%, while an increase in population of 40% occurred from 1960 to 1970.

A State Census, taken in 1975, showed a population of 3,770. Steady population increases are expected to continue in the future, as development patterns along Pomeroy Meadow Road and College Highway continue at the present rate. A direct cause of this growth can be attributed to the construction of the Massachusetts Turnpike and Interstate Route 91 since access to these transportation corridors lessens commuting time, causing in-migration to occur.

Future Environment of Planning Area Without Project

Public health and odor problems will continue to occur in the planning area if the "no project" alternative is chosen.

The currently recognized eutrophic condition of Pequot Pond will continue to accelerate. The converted summer homes, densely clustered at the Pond's edge, will likely suffer contamination of the individual on-site water supplies as the outdated and undersized existing on-lot septic systems continue to be overloaded, with the occasional condemnation of dwellings as a consequence.

The Town Center on-lot systems will continue to threaten the Manhan River, a high quality stream of low assimilative capacity, which passes adjacent to the Town's groundwater supply. As these closely grouped, generally substandard and outmoded systems age, it is logical to

foresee both pollutional problems at this municipal water source and the initiation of dwelling condemnation proceedings in the Town Center area due to failing and uncorrectable on-site systems.

The two surface water impoundments in Southampton which provide water to the City of Holyoke would not be affected by a "no project" option, due to geographic and hydrologic separation from the problem sources.

10.3 Evaluation of Alternatives

General

This Section presents and examines the many possible solutions to the water pollution control problems of Southampton.

Baseline: Optimum Operation of Existing Facilities

The existing waste water disposal facilities in Southampton consist entirely of individual on-lot subsurface disposal systems. As previously discussed, many of these systems were not constructed in accordance with modern standards and/or were never intended for the current year-round usage.

Information resultant from the user survey demonstrates an existing frequency of routine system maintenance that can be considered normal in a residential community. It would be reasonable to expect that significant long-term gains in town-wide system efficiency would ensue following either a user education program or a maintenance enforcement program. However, since physical, rather than operational, characteristics of the system are the root of the problems, it can therefore be concluded that the present situation closely represents the optimum level of operation efficiency that can be attained by the existing facilities.

Regional Solutions

The Town of Southampton is located between the Town of Easthampton to the north, and the City of Westfield to the south. Each of these two adjacent communities presently has available, or is involved in the planning of major interceptor sewers terminating near the Southampton town boundary and sized during design with reserve capacity to transport wastewater from areas in Southampton to each respective municipal Waste Water Treatment Facility (W.W.T.F.).

The Southampton Town Center area is approximately 20,000 feet (4 miles) from the existing Hannum Brook Interceptor terminus near the intersection of Pomeroy Meadow Road and Loudville Road in Easthampton. The Pequot Pond area lies approximately 10,000 feet (2 miles) from the end point of the Arm Brook Interceptor in Westfield (presently under construction).

Two regional Town Center options would serve portions of Pomeroy Meadow Road, College Highway (Route 10), Gunn Road, and Mountain View Circle along with the Town Center. These solutions would provide service to the residential concentration north of the Town Center including the Norris Middle School, several large multi-unit residential buildings, a few small commercial structures, and a significant number of homes.

A substantial length of Pomeroy Meadow Road (approximately 2 miles), zoned for residential development, would also be served by gravity sewerage as the wastewater is transported to the Easthampton interceptor terminus. No unforeseen growth would result from either of these installations, as Town planning policies and existing zoning bylaws provide for the continued residential development of the remaining land in these areas.

Pequot Pond is a single geographical locality, divided politically by the Southampton/Westfield boundary, with approximately 40% of the Pond's surface area lying in Southampton. Since the local pollutional problems, described previously, are common to the area homes in both jurisdictions and since the Arm Brook Interceptor is designed to accomodate the waste loads of the entire Pequot Pond District, a joint Southampton/Westfield solution on a regional basis may be indicated. The land use pattern in Southampton and Westfield would not be significantly altered by this extension of the interceptor. The land influenced in Southampton is a relatively small area and is currently zoned "R-V" (Residential Village; 30,000 square foot minimum lot area), the densest residential usage allowable under Town Zoning Ordinances. This "R-V" designation demonstrates a planning intent which is compatible with interceptor extension. The area in Westfield along this sewerage

extension is a combination of existing residential uses, and existing and proposed business uses. The adjacent industrially-zoned land will be served by the Arm Brook Interceptor.

Alternative Wastewater Treatment Systems

The Best Practicable Waste Treatment Technology (BPWTT) management techniques considered herein include:

1. Biological treatment with discharge to receiving waters.
2. Treatment and reuse.
3. Land application.
4. Subsurface treatment and disposal.

Consideration was also given to a "no-action" plan which would do nothing to alleviate the current problems. Pequot Pond would continue to eutrophy and perhaps lose its recreational status permanently, while individual wells in that area would become unusable due to unrenovated septic effluent infiltration into the ground water. More homes would have to be condemned, due to failing individual subsurface disposal systems on lots too small to construct new systems in compliance with modern regulations. The Town Center would suffer an increase in the existing public health and odor problems and, here too, homes with failing systems on substandard lots would have to be condemned. The fecal coliform counts in the adjacent Manhan River, a stream of recognized

low assimilative capacity, could continue to rise to a point at which regulator agencies would insist that the problems be identified and remedied.

1. Treatment and Discharge to Receiving Waters

This technique is applicable to the Town Center only; the discharge of treated wastewater into lakes or ponds is not practiced in Massachusetts. Therefore, this is not a feasible solution for the Pequot Pond Study Area.

2. Treatment and Reuse

Treatment and reuse was considered, but eliminated as a practical solution due to the high relative cost of treatment and distribution, particularly in this area which exhibits no shortage of available water supply and receives an annual average precipitation of 45 inches.

3. Land Application

Land application facilities would require holding lagoons capable of retaining several months of flow during the winter. Land requirements for this alternative would be considered excessive to serve either of these small population centers. It would be difficult, due to topographical restraints, to choose a lagoon site near the Pond or the Town Center which would not be objectionably close to the residential neighborhoods. There are no large areas of non food chain acreage conveniently near either location.

4. Subsurface Treatment and Disposal

This treatment method is considered for both the Town Center area and the Pequot Pond area. For several subsurface options the flows to such facility(ies) would be in excess of 15,000 GPD and would, in accordance with State and Federal policies, require treatment works commensurate with the protection of gradient groundwater usage prior to subsurface disposal. A comprehensive investigation of subsurface site conditions, including geo-hydrological pilot testing and monitoring, is also required during the final site selection process for an over 15,000 GPD flow with subsurface disposal.

Evaluation and Ranking of Proposals

The alternatives for servicing the Town Center and Pond areas differ in three ways:

1). Type of collection system - gravity vs. pressure;

2). Type of disposal system - regional vs. local;

3). Area of service - limited vs. area-wide.

The alternatives were evaluated with respect to direct monetary costs, environmental impacts, operational considerations, energy efficiency, flexibility, social impact, etc.

The alternatives for each area are listed on the following page.

Identification	Area of Service	Type of Collection System	Type of Disposal System
Town Center:			
A-1	Area-Wide	Gravity	Regional
A-2	Town Center	Gravity	STP & Discharge
A-3	Town Center	Gravity	STP & Leach Field
A-4	Town Center	Pressure	STP & Leach Field
A-5	Area-Wide	Pressure	Regional
A-6	Limited Town Ctr.	Pressure	Leach Field
Ponds Area:			
B-1	Area-Wide	Gravity	Regional
B-2	Area-Wide	Pressure	Regional
B-3	Pond Area	Pressure	STP & Leach Field
B-4	Limited Pond Area	Pressure	Leach Field

Some important characteristics of each are listed in the Table on the following page.

The Town considers Option A-6, a pressure collector system discharging to a leach field servicing a limited area of Town Center and Option B-2, a pressure collector system discharging to the City of Westfield sewerage system servicing most of the eastern Ponds area as the two alternatives that best meet the Town's needs.

Option A-6 has the lowest Total Present Worth and services only that area of Town Center that, according to the Town Board of Health, has the current most pressing public health problems. Options A-1 and A-5 have considerably higher Total Present Worths and have the potential to encourage unwanted growth along the route of the long interceptor into Easthampton. The Total Present

TABLE
COMPARISON OF OPTIONS

OPTION	UNITS SERVED (PRESENT)	TOTAL CAPITAL COST	ANNUAL O & M COST	TOTAL PRESENT WORTH	TOTAL PRESENT WORTH PER UNIT SERVED
Town Center:					
A-1	348	$2,040,000	$25,000	$2,027,000	$ 5,800
A-2	96	$ 922,000	$13,000	$ 961,000	$10,000
A-3	96	$1,245,000	$15,000	$1,287,000	$13,400
A-4	117	$1,408,000	$19,000	$1,465,000	$12,500
A-5	366	$2,225,000	$32,000	$2,274,000	$ 6,210
A-6	73	$ 863,000	$ 9,000	$ 858,000	$11,750
Ponds Area:					
B-1	129	$1,287,000	$10,000	$1,230,000	$ 9,530
B-2	163	$1,390,000	$14,000	$1,360,000	$ 8,340
B-3	150	$1,373,000	$19,000	$1,410,000	$ 9,400
B-4	47	$ 377,000	$ 7,000	$ 400,000	$ 8,510

NOTE: All construction costs based on March 5, 1981 ENR Index of 3388. Present worths calculated for 20 years, 7 1/8% discount rate.

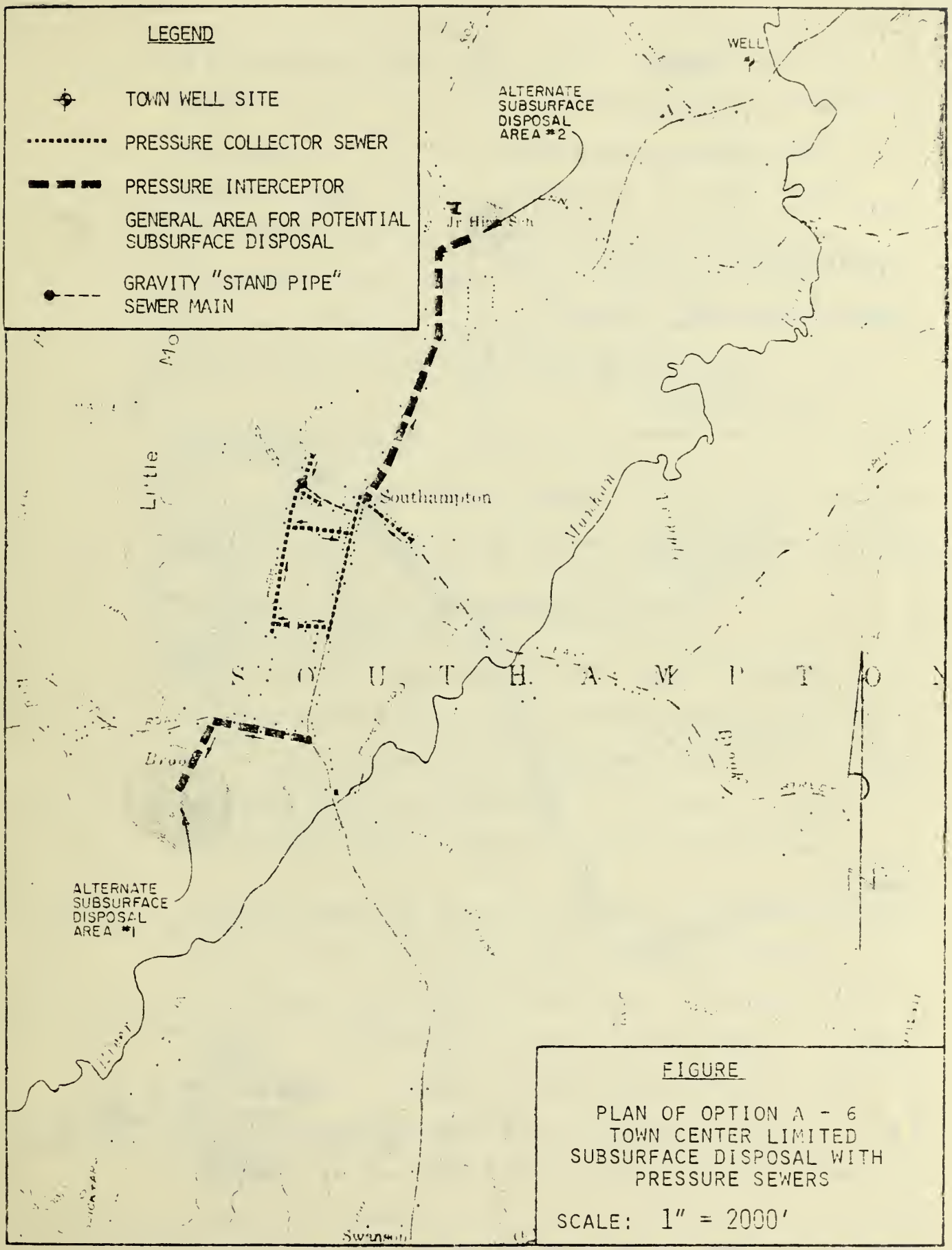
Worths of Options A-2, A-3 and A-4 are also greater than that of Option A-6; in addition, Option A-2 is not feasible since it requires a direct discharge into a stream having a relatively low flow.

Option B-2 was selected even though it has the second greatest Total Present Worth of the four Pond options. It does, however, have the lowest Total Present Worth per Unit Served and, most importantly, best supports a regional approach to solving the problems of the entire Ponds area, including those sections within the City of Westfield and the City of Holyoke. Under B-2 the sewage is transported completely out of the drainage area for the Ponds, another advantage.

Selected Plan

Based on the opinions of the Town's citizens and governing Boards, the cost-effectiveness analysis, and a consideration of environmental concerns, the pressure sewer-leach field system servicing a limited area of Town Center and the pressure sewer-regional disposal system servicing the eastern shore of Pequot Pond are recommended as the most suitable solutions to the existing water pollution control problems in Southampton (see the following two figures).

The recommended plan represents a consensus of the opinions and recommendations of the Town's citizens and appropriate Town Boards.



FIGURE

PLAN OF OPTION A - 6
TOWN CENTER LIMITED
SUBSURFACE DISPOSAL WITH
PRESSURE SEWERS

SCALE: 1" = 2000'

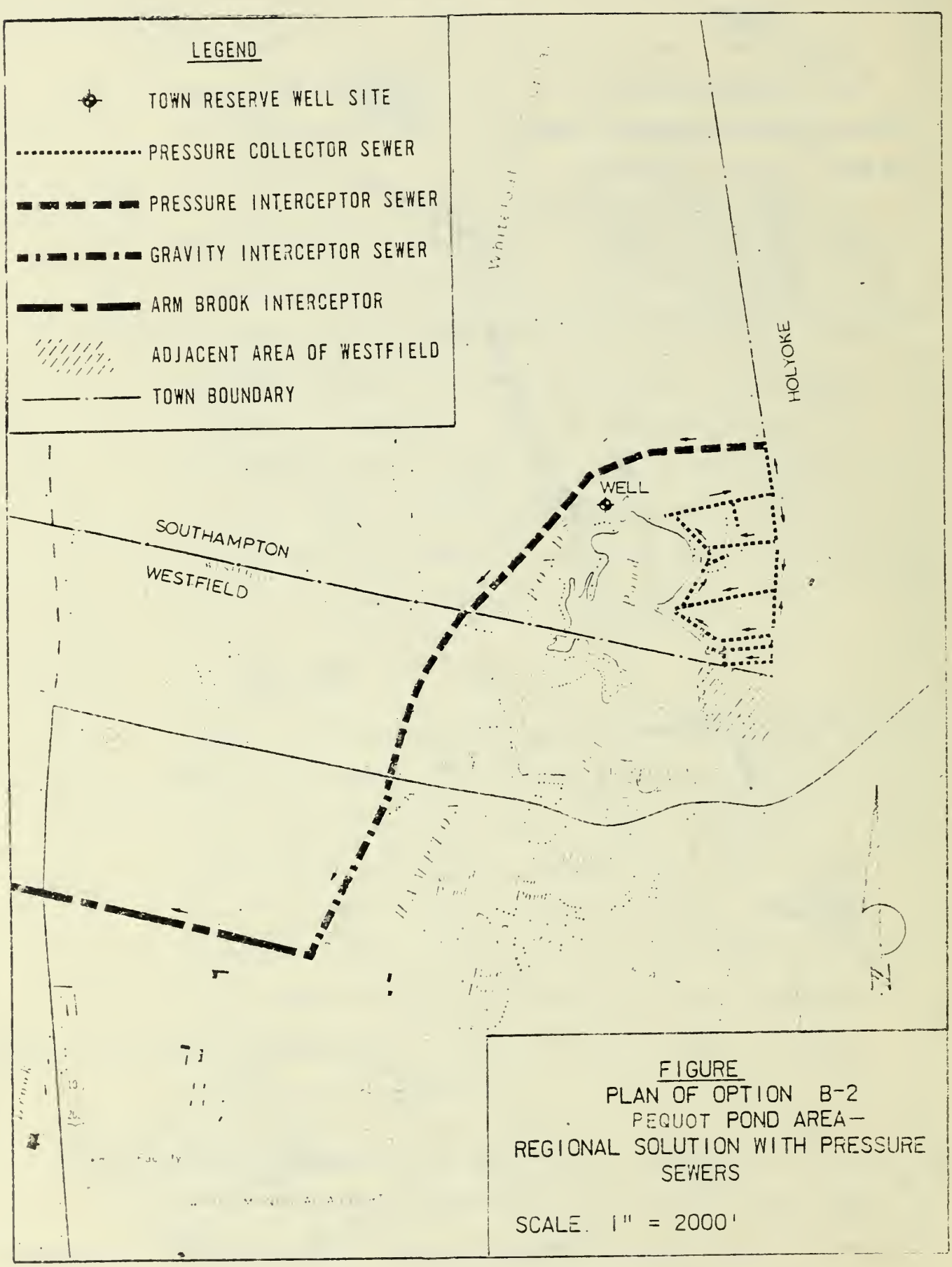


FIGURE
PLAN OF OPTION B-2
PEQUOT POND AREA—
REGIONAL SOLUTION WITH PRESSURE SEWERS

SCALE. 1" = 2000'

ALMER HUNTLEY, JR., & ASSOCIATES, INC.
SURVEYORS · ENGINEERS · PLANNERS

A public hearing was held on April 15, 1981 and continued on April 29, 1981 at 7:30 p.m. at the Southampton Town Hall. The various options for resolving the existing sewage related problems in the Town Center and Ponds areas were presented to the residents together with the environmental and social effects, the locations, areas of service, and monetary costs of those plans found by this study to be most viable.

Preliminary Design

The following two Tables summarize the projected present and future Town Center and Pequot Pond flows and loadings.

Town Center and Ponds Collection Systems

Approximately 40,000 linear feet of small diameter pressure sewer piping and 3,000 linear feet of 12-inch gravity sewer pipe will be installed, most under existing roads and streets. The system will include cleanout structures, shut-off valves, and air relief valves.

Existing septic tanks will be pumped out and filled with suitable material to avoid future safety problems. The grinder pump units will be installed outside the buildings, in individual watertight "manholes." It may be possible to "cluster" up to three dwelling units around a single grinder unit rather than provide a separate unit for each dwelling unit. During the design

TABLE

DESIGN CRITERIA - OPTION "A-6"
TOWN CENTER LIMITED - SUBSURFACE DISPOSAL WITH PRESSURE SEWERS

A. Source	AVERAGE FLOW (GPD)
1. Town Hall 6 persons @ 15 gal/person/day	90
2. Town Hall Assembly 50 persons @ 3 gal/person/day	150
3. Library 7 persons @ 15 gal/person/day	105
4. Fire Station 3 persons @ 15 gal/person/day	45
5. School (center) 265 persons @ 10 gal/person/day	2,650
6. Church 140 persons @ 3 gal/person/day	420
7. Grange 80 persons @ 3 gal/person/day	240
8. Conant Park 100 persons @ 5 gal/person/day	500
9. Sixty (60) Homes (60 x 3.0 = 180 persons) 180 persons @ 70 gal/person/day	12,600
PRESENT TOTAL:	16,800

B. Peak Flows

1. Peak Flows - Present: (3.0 x Average) = 50,400 GPD (35 GPM)

C. Organic Considerations

1. BOD_5 (Present): 0.017 @ 340 = 48#/day

2. TSS (Present): 0.017 @ 430 = 61#/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present) 73 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

1. Present: 73 D.U.E. x 1 GPM/D.U.E.* 73 GPM (0.083 MGD)

*Head controlled output of all pumps operating together.

TABLE

DESIGN CRITERIA - OPTION "B-1"

PEQUOT POND AREA - REGIONAL SOLUTION WITH PRESSURE SEWERS

A.

	SOURCE	AVG. FLOW (GPD)
1.	Homes at Pond & Pequot Rd., Southampton 144 Homes X 2.5 people/home x 70 gpd/capita	25,200
2.	Bleumer Road Fire Station 3 persons @ 15 gal/person/day	45
3.	Aloha Snack Bar (Seasonal) 15 seats @ 10 gal/seat/day	150
4.	Mahoney's Package Store 35 persons @ 3 gal/person/day	105
5.	Camp Jahn (Seasonal) 250 persons @ 20 gal/person/day	5,000
	PRESENT TOTAL	30,500
6.	Future - 64 additional homes 64 x 2.5 x 70 gal/person/day	11,200
	FUTURE TOTAL	41,700

B. Peak Flows

1. Peak Flows (Present) (3.0 x Average) = 91,500 GPD(65 GPM)
2. Peak Flows (Future) (3.0 x Average) = 125,100 GPD(85 GPM)

C. Organic Considerations

1. BOD^5 (Present): 0.031 @ 340 mg/l = 88#/day
2. BOD^5 (Future) : 0.042 @ 340 mg/l = 120#/day
3. TSS (Present): 0.031 @ 430 mg/l = 110#/day
4. TSS (Future) : 0.042 @ 430 mg/l = 150#/day

D. Equivalent Dwelling Units

1. Equivalent Dwelling Units Served (Present) 163 D.U.E.
2. Equivalent Dwelling Units Served (Future) 227 D.U.E.

E. Peak Flow Rate Resulting from Grinder Pump Units

Present: 163 D.U.E. x 1.0 GPM*/D.U.E. 163 GPM(0.235 MGD)
Future : 227 D.U.E. x 0.9 GPM*/D.U.E. 204 GPM(0.294 MGD)

*Head controlled output of all pumps operating together.

phase, consideration will also be given to powering the grinder pump units from a central source rather than rely on each home's electrical system.

The grinder pumps will be owned and maintained by the Town; service easements will be obtained when the facilities are on private property.

The sewage flowing from Southampton into the Westfield system will be metered at the Town-City boundary.

Town Center Leach Field

The exact location of the disposal site for the Town Center option will be determined during the design phase of the project, since it is more appropriate to perform the required detailed geohydrologic work at that time. However, enough general data exists to enable us to identify two areas appropriate for the site.

Groundwater conditions are favorable at both sites and percolation rates (determined by field tests) are about 2 minutes/inch.

Based on this information, the expected 16,000 gpd flow and the requirements of Title V of the State Sanitary Code, the following preliminary design concepts are considered appropriate:

Pressure Sewer Distribution Box	One each
Size of Septic Tank (150% x 16,000 gpd) = Use two 12,000 gallon tanks, each 10' x 11' x 25'	24,000 gallons
Grease Traps = Use two, each 6' x 6' x 11'	1,500 gallons
Siphon Chambers = Use three, each 7' x 13'	1,000 gallons
Distribution Boxes	Six each
Leaching Pits Each 10' deep by 14' diameter	Twelve each
Total land required including buffer zone =	Two acres

10.4 Environmental Effects of Selected Plan

Primary and Secondary Impacts

The environmental impacts of the Pressure Sewers and the subsurface disposal system are not substantial.

No known endangered species will be affected by the project, primarily because most of the project will be constructed in already disturbed areas or within roadways. No facilities will be relocated but up to two acres of agricultural land will be required for the leaching area. Since the subsurface disposal area will be designed and constructed in accordance with Title V of the State Environmental Code, the quality of any down-gradient surface or ground water will not be affected. No adverse effect on area property values is anticipated; they should, in fact, appreciate following implementation of the project due to the availability of municipal sewerage. Those existing structures having lots too small to permit Title V complying septic systems will no longer be subject to possible condemnation for public health reasons. The recreational potential of Pequot Pond will be enhanced; the existing potential for contamination of the groundwater and the individual on-site water supplies by the subsurface sewage disposal systems will be eliminated.

The impact of the project on archeological resources is, at this time, unknown. A Phase I and, if necessary, Phase II Archeological Investigation will be performed as part of the Step 2 process.

Construction of the sewer system may have an adverse impact on those living adjacent to the construction areas. Since sewer construction may proceed at a rate of about 300 feet a day, a home might be exposed to noise, dust and odors for 2 or 3 days.

Noise in and at the edge of a typical construction site may have peak intensities of up to 80-100 dBA. To minimize the adverse impacts, construction will be limited to 7 AM to 5 PM (occasionally to 7 PM) and applicable OSHA and Commonwealth noise performance standards will be included in the project specifications and strictly enforced by the resident engineer.

Construction-related air pollution impacts are best illustrated by association with the offending pollutants:
Dust: One type of air pollutant which may be encountered as a result of this project is particulate matter such as dust. There are many construction activities which produce dust, including clearing and grubbing (cross-country sewers), excavation, blasting, aggregate spreading, wind-blown dust from stockpiled materials, application of lime and fertilizers on areas to be seeded, and dust generated

by movement of equipment and automobile traffic over the construction site. Dust from the construction in the street right-of-way can be handled with water or chemicals as directed by the engineer; dust control measures will be included in the specifications.

Combustion By-Products: Other sources of particulate matter (smoke) as well as other air contaminants are emissions from heavy-duty diesel-powered vehicles at the job site. It is not anticipated that the air quality in the vicinity of the construction will exceed the national primary or secondary air quality standards. However, due to the rural residential character of the project area and the minimal volume of large diesel-powered vehicles traveling over most Town roads, the typical diesel "odor" emitted in the exhaust of the construction vehicles may be more noticeable. This would be a short-term effect (perhaps 8-hours or less) and would do no irreparable harm.

Water Quality Impact: A major potential source of water pollution from this proposed project is construction-generated sediment which is transported primarily by water and to a lesser extent, by wind. Erosion of land areas disturbed by construction activities is dependent on many factors including the characteristics of the soil, climatological conditions, and topography of the site, particularly in areas where clearing and excavation are to take place.

During the construction stage, any of the following activities may be potential sources of sediment pollution:

1). Site preparation - clearing, grubbing;
2). earthmoving (cutting, filling and stockpiling);
3). construction and removal of cofferdams or other diversion structures or stream relocation (stream crossings);
4). access and haul road construction and use;
5). rock blasting, drilling, tunnelling or channelling;
6). landscaping and general site clean-up operations;
7). excavation dewatering; and
8). sediment control pond discharges (as needed).

The project specifications will require construction techniques that minimize the impact of sediment pollution (grading, vegetative cover and erosion control). In cases where work tasks may have a potential environmental effect but are not adequately covered in the specifications the resident engineer will be responsible for seeing that such work tasks are carried out in a manner responsive to the spirit and intent of the specifications.

Solid Waste Impact: Solid wastes generated by the project and requiring disposal include:

1). Excavated material from site preparation and trenching which cannot be used as backfill or yard grading.

2). Tree and brush waste from clearing and grubbing activities.
3). Material generated during "clean-up" operations.

Every attempt will be made to salvage useful or marketable items. While disposal is normally a contractor responsibility, the project specifications will require that any wastes be disposed of at a state-approved sanitary landfill.

The size of the Town Center system will severely limit the amount of growth it can accomodate; it will, therefore not cause any secondary growth impacts. Any growth encouraged by the Pequot Pond interceptor will be regulated by the Town's Zoning By-Laws.

The cost of implementing the program recommended in this Plan, divided into State and Federal grant eligible and ineligible portions, is summarized in the following Table.

TABLE
ESTIMATED COST OF PROJECT
TOTAL PROJECT

Item	Cost Total	Eligible	Ineligible
Construction & Contingency			
Collector Sewers	$1,375,000	$1,375,000	$ 0
Interceptor Sewers	365,000	365,000	0
Disposal Facility	120,000	120,000	0
Westfield WWTP	100,000	0	100,000
Engineering			
Collector Sewers	189,000	189,000	0
Interceptor Sewers	50,000	50,000	0
Disposal Facility	16,000	16,000	0
Sites & Easements			
Sewers	24,000	0	24,000
Disposal Facility	15,000	15,000	0
Interest During Construction	90,000	0	90,000
Administrative, Legal, Financial	20,000	0	20,000
TOTAL:	$2,364,000	$2,130,000	$234,000

The Town's share of the cost of the project will be reduced significantly by State and Federal grants, in amounts of from 40% to 94% of the eligible cost of the disposal facility. It is difficult to predict at this time the exact amount of the aid because of the complex and often subjective nature of the grants process; such a determination is typically made by the State and Federal government during processing of the Step 3 (construction) grant application.

The primary basis for the uncertainty in this analysis lies with whether or not the pressure sewer systems recommended in this report qualify for the higher funding that can be offered under EPA's Alternative/Innovative Technology Program. Because of this all Town costs will be presented as a range, summarized in the following Table.

TABLE
TOWN SHARE OF PROJECT COSTS

	Town Share	
	Minimum Aid	Maximum Aid
Construction & Contingency		
Collector Sewers	$ 825,000 (60%)	$ 82,500 (6%)
Interceptor Sewers	36,500 (10%)	36,500 (10%)
Disposal Facility	12,000 (10%)	7,200 (6%)
Westfield WWTP	100,000 (100%)	100,000 (100%)
Engineering		
Collector Sewers	189,000 (100%)	11,300 (6%)
Interceptor Sewers	5,000 (10%)	5,000 (10%)
Disposal Facility	1,600 (10%)	1,000 (6%)
Sites & Easements		
Sewers	24,000 (100%)	[illegible] (100%)
Disposal Facility	1,600 (10%)	1,000 (6%)
Interest During Construction	90,000 (100%)	90,000 (100%)
Administrative, Legal, Financial	20,000 (100%)	20,000 (100%)
TOTAL	$1,304,700	$378,500

Note: The percentages in parentheses represent the Town's share of the Total Item Cost.

The Town's share of the capital cost of the project ranges from $379,000 to $1,305,000.

The Town has not yet determined how the cost of the project will be distributed but as one extreme we can assume that the user will be assessed as much of the cost as is legally possible. Certain costs, however, may appear on the tax rate: interest during construction, $90,000 (cannot be bonded for under Massachusetts General Law); the Town's share of the cost of the Septage Truck, $3,200 (will be used to pump the tanks of individuals not on the system); and the Town's share of the cost of servicing Town Facilities.

To determine a "per user" cost it is necessary to first determine the total number of assessable "units." Based on the number of sources reported for Options A-6 and B-2, the number of "present" users total 236, with 223 (95%) representing private and commercial facilities and 13 (5%) representing Town facilities.

The total capital cost assessable per private or commercial unit may range from $1,220 to $5,160 while the capital cost assessable against the tax rate may range from $110,000 to $160,000.

The yearly unit capital cost, assuming a 5%, 40-year U.S. Farmers Home Administration Loan, may range from

$70 to $300 plus the increase in the tax rate attributable to the project.

Operation and maintenance costs, totalling $23,000 per year, may also be apportioned among users and non-users (with non-users assessed a portion of the cost of servicing Town facilities). The yearly private and commercial O & M cost is estimated as $100 with $1,150 paid for by the entire Town through increased property taxes.

Total yearly unit costs (capital and O & M) for users may range from $170 to $400 plus the amount placed on the tax rate.

At this time the Town intends to apply for a U.S. Farmers Home Administration loan to finance the Town's share of the capital cost of the project. Depending upon the amount of grant aid, the Project may have a significant economic effect on the user.

Irreversible or Irretrievable Commitments of Resources

The only known irreversible and irretrievable commitments of resources would be those expenditures of materials and energy required for construction of the project, for the continuing operation and maintenance of the facilities; and the delegation of that small parcel (2+ acre) of presently vacant land for use as the Town Center leach field.

Relationship Between Short-Term Uses of the Environment and Enhancement of Long-Term Productivity

The solution proposed for the two areas does not adversely affect short or long-term land or water uses, and does, in fact, enhance both. Water quality will be greatly improved by the project. The integrity of the individual water supply wells in the Ponds area will be assured and fishing, swimming, and other recreational aspects of the area will be improved.

APPENDIX A - SOIL MAPS

DETAILED SOIL MAP

TOWN OF SOUTHAMPTON, HAMPSHIRE COUNTY, MASSACHUSETTS

MAP DEVELOPED BY

U. S. DEPARTMENT OF AGRICULTURE — SOIL CONSERVATION SERVICE

This map is part of an operational soil report. Its use is explained in the narrative volume included in the report.

MAY 1974 CMC

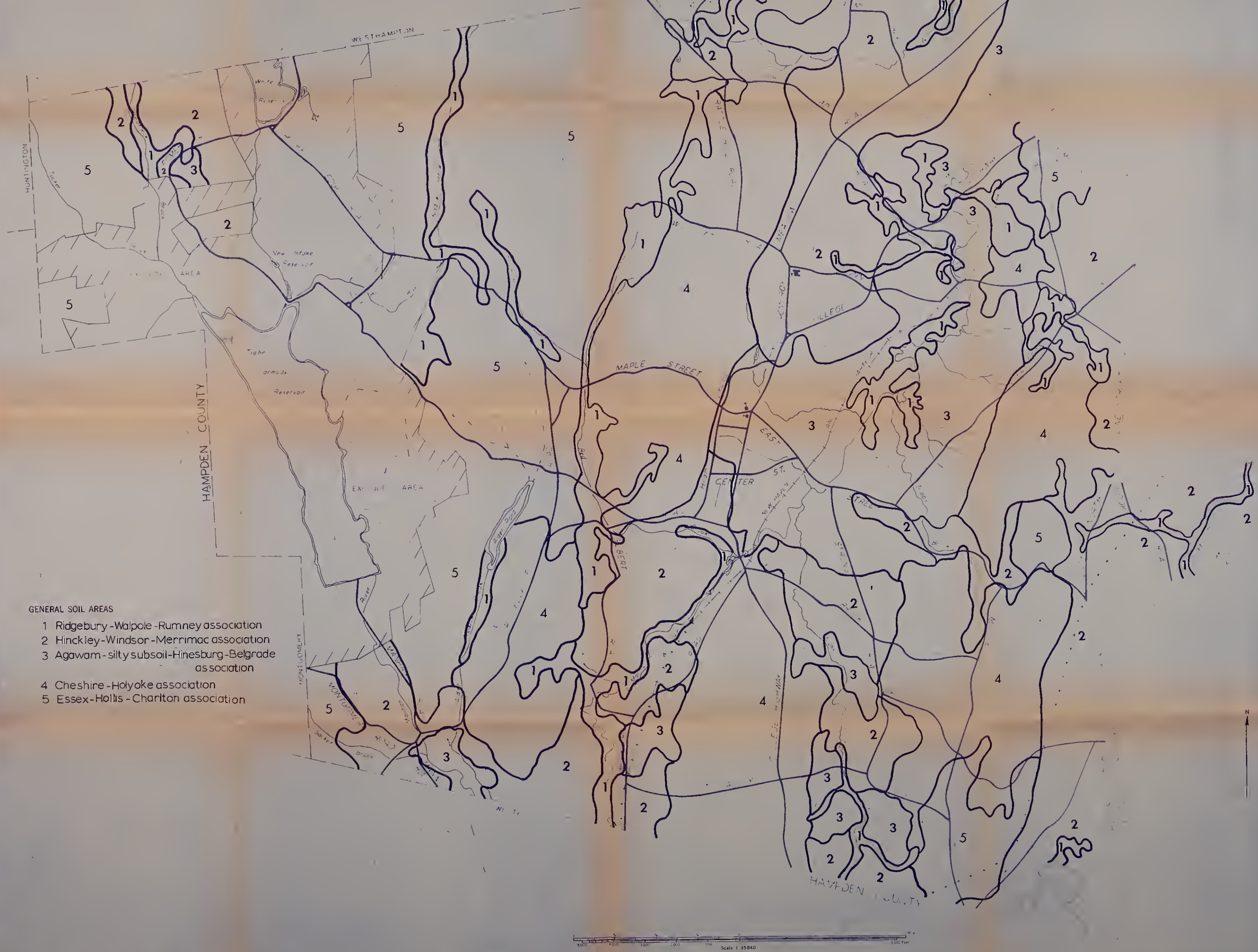
56-19F

GENERAL SOIL MAP

TOWN OF SOUTHAMPTON, HAMPSHIRE COUNTY, MASSACHUSETTS

MAP DEVELOPED BY
U. S. DEPARTMENT OF AGRICULTURE – SOIL CONSERVATION SERVICE

This map is part of an operational soil report. Its use is explained in the narrative volume included in the report.



GENERAL SOIL AREAS

1 Ridgebury-Walpole-Rumney association
2 Hinckley-Windsor-Merrimac association
3 Agawam-silty subsoil-Hinesburg-Belgrade association
4 Cheshire-Holyoke association
5 Essex-Hollis-Charlton association

MAY 1974 CMC

56-19H

SOIL LIMITATIONS FOR SEPTIC TANK SEWAGE DISPOSAL

TOWN OF SOUTHAMPTON, HAMPSHIRE COUNTY, MASSACHUSETTS

MAP DEVELOPED BY
U. S. DEPARTMENT OF AGRICULTURE – SOIL CONSERVATION SERVICE

This map is part of an operational soil report. Its use is explained in the narrative volume included in the report.

DEGREE OF LIMITATION

1	Slight
2	Moderate
3D	Severe (hardpan-deep)
3F	Severe (flooding)
3H	Severe (hardpan-shallow)
3R	Severe (bedrock)
3S	Severe (slope)
3W	Severe (wetness)
X	Unclassified

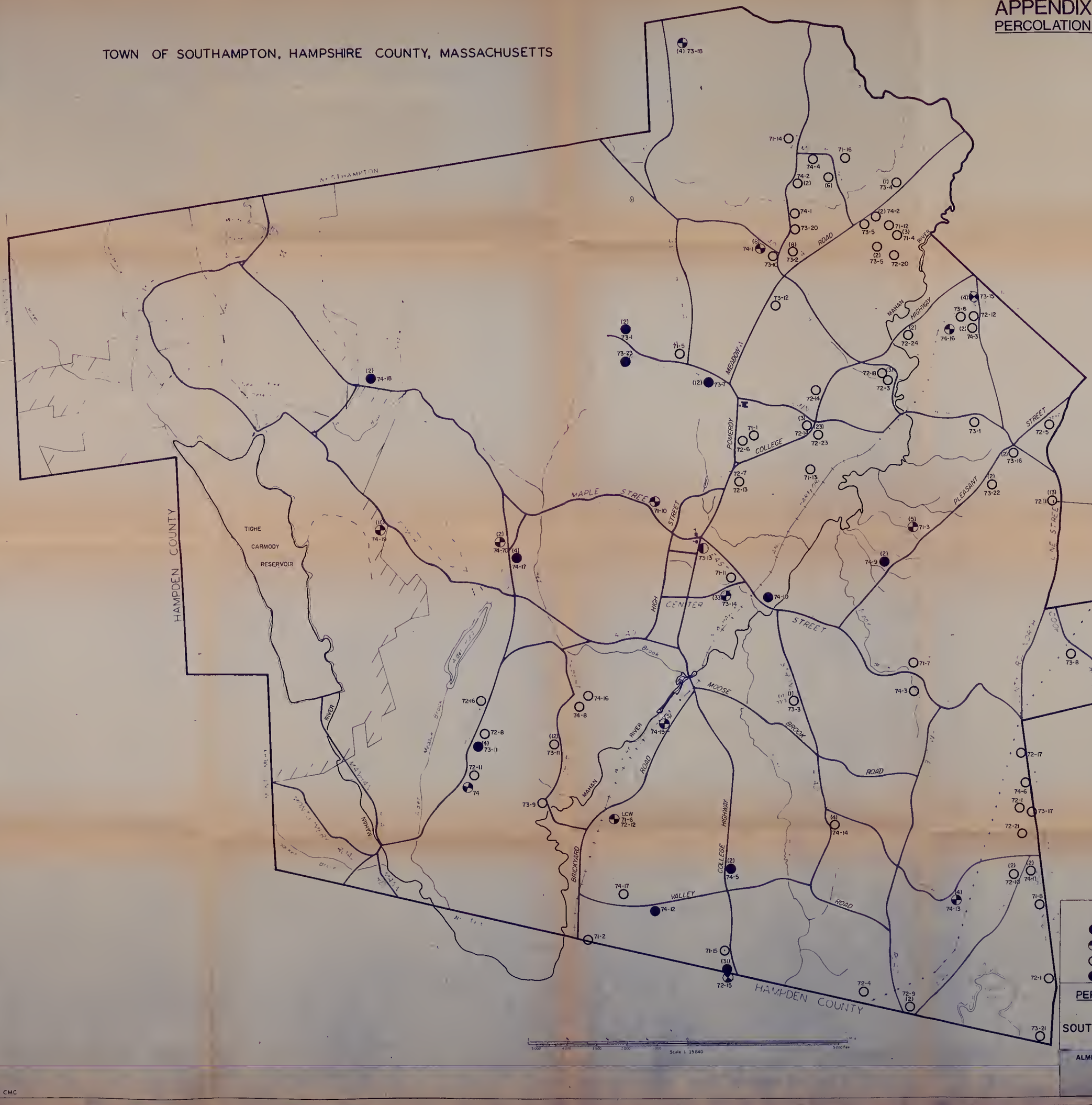
Scale 1:15840

MAY 1974 CMC

56 JYL

APPENDIX F-4
PERCOLATION TEST DATA

TOWN OF SOUTHAMPTON, HAMPSHIRE COUNTY, MASSACHUSETTS



SYMBOL KEY

(13) No. OF TEST
72-11 CHRONOLOGICAL No.
YEAR TEST PERFORMED

- ACCEPTABLE PERCOLATION TEST - FAILURE OF OTHER REQUIREMENTS
- GROUPING - BOTH ACCEPTABLE & UNACCEPTABLE
- ACCEPTABLE PERCOLATION TEST
- UNACCEPTABLE PECOLATION TEST

PERCOLATION TEST DATA

TOWN OF

SOUTHAMPTON, MASSACHUSETTS

APRIL 1980

ALMER HUNTLEY, JR. & ASSOCIATES, INC.
SURVEYORS - ENGINEERS - PLANNERS
125 PLEASANT STREET
NORTHAMPTON, MASS.

MAY 1974 CMC

56-194

APPENDIX B - CERTIFICATIONS

APPENDIX B-1

RESOLUTION OF INTENT

Resolution indicating that the Southampton Town Government, having the necessary legal, financial, institutional, and managerial resources, intends to construct, operate, and maintain certain proposed treatment works if such works are approved and funded by the State and Federal Governments.

WHEREAS, the Town of Southampton possesses the necessary legal, financial, institutional, and managerial resources to construct, operate and maintain sewage treatment works and related facilities; and

WHEREAS, the existing collection, treatment and disposal facilities do not meet current State and Federal requirements; and

WHEREAS, the recently completed facility planning report, prepared in accordance with the Final Construction Grant Regulations, 40 CFR, Part 35, Subpart E, dated September 27, 1978, recommends certain improvements to the Town's collection, treatment and disposal facilities that will satisfy State and Federal requirements.

NOW THEREFORE, BE IT RESOLVED that the Town hereby indicates its concurrence with the proposed recommended facilities in the referenced planning report and the Town's intent to construct, operate, and maintain such proposed facilities in accordance with State and Federal requirements, if said facilities are approved and funded by the State and the U.S. Environmental Protection Agency.

Dated this 15 day of July 1981

Chairman, Board of Selectmen

Member, Board of Selectmen

Member, Board of Selectmen

Town Clerk

APPENDIX B-2

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

ASSURANCE OF COMPLIANCE
FOR
TITLE VI OF THE CIVIL RIGHTS ACT OF 1964
AND
SECTION 13 OF THE FWPCA AMENDMENTS OF 1972

NAME AND ADDRESS OF APPLICANT/RECIPIENT *(Hereinafter called ASSUROR)*	GRANT IDENTIFICATION NUMBER *(To be completed by EPA)*	GRANT AMOUNT REQUESTED
Board of Selectmen Town Hall Southampton, MA 01073	C 250-438-01	$

TYPE OF GRANT
☐ DEMONSTRATION ☐ RESEARCH ☐ TRAINING
☐ OTHER *(Specify)*:

CHECK ONE
☐ NEW ☐ CONTINUATION

HEREBY AGREES THAT IT will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and all requirements of the U.S. Environmental Protection Agency *(Hereinafter called "EPA")* issued pursuant to that title, to the end that in accordance with Title VI of that Act, no person in the United States shall, on the ground of race, color, or national origin be excluded from participation in or be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Assuror receives financial assistance from EPA and hereby gives assurance that it will now and hereafter take all necessary measures to effectuate this agreement.

HEREBY AGREES THAT IT will comply with all applicable requirements of Section 13 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) and all requirements of EPA issued pursuant to that section, to the end that in accordance with that section of that Act, no person in the United States shall, on the ground of sex be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity under the said Federal Water Pollution Control Act Amendments for which the Assuror receives financial assistance from EPA and hereby gives assurance that it will now and hereafter take all necessary measures to effectuate this agreement.

If any real property or structure thereon is provided or improved with the aid of financial assistance extended to the Assuror by EPA, this Assurance obligates the Assuror, or, in the case of any transfer of such property, any transferee for the period during which the real property or structure is used for a purpose involving the provisions of similar services or benefits. If any personal property is so provided, this Assurance obligates the Assuror for the period during which it retains ownership or possession of the property. In all other cases, this Assurance obligates the Assuror for the period during which the financial assistance is extended to it by EPA.

THE ASSURANCE is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts or other financial assistance extended after the date hereof to the Assuror by EPA including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Assuror recognizes and agrees that such Federal financial assistance will be extended in reliance on the representations and agreements made in this Assurance and that the United States shall reserve the right to seek judicial enforcement of this Assurance. This Assurance is binding on the Assuror, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign this Assurance on behalf of the Assuror.

The obligations assumed by the Assuror hereunder are in addition to any obligations which may be imposed on the Assuror by any applicable regulation now outstanding or which may hereafter be adopted by EPA to effectuate any provision or goal of the said Title VI and all applicable requirements of the said Section 13, and no part of this Assurance shall be read so as to in any way detract from or modify any obligation which may be imposed on the Assuror by any such regulation standing alone.

SIGNATURE(S) OF AUTHORIZED OFFICIAL	AND/OR COMPARABLE AUTHORITY	DATE
C. Richard Hostetter	Chairman Board of Selectmen	July 15, 1981

EPA Form 4700-1 (Rev. 6-74)

APPENDIX B-3

SUMMARY OF COSTS OF PLANNED TREATMENT WORKS SCHEDULED BY PROJECT AND CATEGORY *(Read instructions on reverse before completing form)*		MUNICIPALITY *(Applicant)*: Southampton, Massachusetts				
1.		* SECOND ** PROJECT	* THIRD PROJECT	* FOURTH PROJECT	* FIFTH PROJECT	TOTAL ALL PROJECTS
2.	PROJECT STEP	STEP 2	STEP 3	STEP	STEP	
3.	ESTIMATED CALENDAR QTR/YEAR APPLICATION WILL BE SUBMITTED TO EPA FOR FUNDING	4/81	1/83			
		$	$	$	$	$
4.	a. CATEGORY I Secondary Treatment and BPWTT	16,000	230,000			
	b. CATEGORY II More Stringent Treatment					
	c. CATEGORY IIIA Infiltration/Inflow Correction					
	d. CATEGORY IIIB Major Sewer System Rehabilitation					
	e. CATEGORY IVA New Collectors, etc.	190,000	1,375,000			
	f. CATEGORY IVB New Interceptors, etc.	50,000	365,000			
	g. CATEGORY V Correction of Combined Sewer Overflows					
	h. CATEGORY VI Treatment and/or Control of Stormwaters					
5.	TOTAL ESTIMATED COST OF RECOMMENDED PROJECTS	$ 256,000	$1,970,000	$	$	$
6.	STEP 1 PROJECT COST Project No. C 250-438 -01					$ 8,000
7.	GRAND TOTAL ESTIMATED COST OF ALL PROJECTS TO BE INCLUDED IN THE ENTIRE GRANT					$ 2,234,000

8. COST ESTIMATES OF RECOMMENDED PROJECTS WERE COMPUTED AS OF 3/81 *(month and year)* AND REFLECT THE LATEST CONSTRUCTION COST INDEX OF 3388 AS REPORTED BY THE ENGINEERING NEWS RECORD

NOTE Suggested format for data to be included in the facilities plan.

** Include project description in Facilities Plan narrative.

* The First Project is the initial *(Step 1)* project under this grant for the treatment works.

APPENDIX B-4

STATEMENT CONCERNING AVAILABILITY OF LAND

To the best of our knowledge the site of the proposed disposal facility is available for purchase by the Town.

We estimate the cost of the parcel to be no more than $15,000.

Arthur H. Sattler
Chairman, Board of Selectmen

Lawrence A. Elston
Member, Board of Selectmen

Edward A. Hammond
Member, Board of Selectmen

APPENDIX C - SUMMARY OF PUBLIC HEARING

APPENDIX C

SUMMARY OF PUBLIC HEARING

A public hearing was held on April 15 and April 29, 1981 in the Town Hall in Southampton. The Notice of Hearing appeared in the Holyoke Transcript Telegram and Daily Hampshire Gazette, local newspapers, on March 12 and April 2, 1981. The meeting dates were also the subject of several articles appearing in the Gazette before the hearings.

The following individuals attended the hearing:

Tom Camilleri	Board of Selectmen
Ed Youmell	Board of Selectmen
Art Sattler	Board of Selectmen
John Raymond	Board of Health
Jay O'Reilly	Planning Board
James Carey	Finance Committee
Richard Frary	Finance Committee
Donald Madsen	Citizen
Douglas Madsen	Development & Industrial Comm.
Emelie Plourde	Citizen
Robert Smith	Citizen
Edward Borucki	Board of Health
Linda O'Rourke	Citizen
R. A. Lyman	Citizen
J. F. Slattery	Water Commission
Melinda Wheeler	Daily Hampshire Gazette

The discussion is paraphrased and summarized below; a copy of the verbatim manuscript is contained in the project files of Almer Huntley, Jr., and Associates, Inc., Northampton, Massachusetts.

The hearing was opened at 7:30 p.m. by Tom Camilleri, Chairman of the Board of Selectmen. After several introductory remarks he introduced Stephen Demski, Project Engineer for Huntley Associates, Inc.

After several introductory remarks Mr. Demski explained the scope of the study, the alternative sewer and wastewater treatment systems and funding programs. The hearing then opened for questions.

QUESTION: What type of agreement would be required between Westfield and Southampton?
ANSWER: The agreement would be a legally binding Contract, approved by the Massachusetts Emergency Finance Board, good for 20 or 30 years.

QUESTION: Would Option A-1 encourage growth along Pomeroy Meadow Road?
ANSWER: It probably would. This is a major disadvantage of Option A-1.

QUESTION: Must homes tie into the system?
ANSWER: That is a local Board of Health decision, though the Town can assess a betterment fee against a piece of property even if the property is not tied into the system.

QUESTION: How will future tie-ins be charged?
ANSWER: This would be a Town decision. Some Towns assess the same charge as is assessed the original users and use these additional monies to pay for system expansion.

QUESTION: What technique would be used to calculate the

betterment charge?

ANSWER: The Town has several options including frontage, area of lot, and number of living units in building.

QUESTION: How do we select two plans (one for Town Center, one for the Ponds) from among the ten or eleven offered?
ANSWER (By Selectmen): We should have another meeting with the appropriate Town Boards to select two alternatives (general agreement).

QUESTION: What do we have to do to file a Step 2 grant application?
ANSWER: You must first hold a Town Meeting to appropriate the design and construct monies.

STATEMENT (By a Selectman): I think we should choose a system that services the most number of people.

STATEMENT (By Finance Committee member): It is difficult to select two alternatives since they serve different numbers of people, the cost per unit varies significantly.

STATEMENT (By the Engineer): The Town must decide what criteria it wishes to use to evaluate the alternative systems.

QUESTION: Can on-site systems be installed in Town Center?
ANSWER (By Board of Health member): The homes are too close

and the soils too poor to support on-site systems.

QUESTION: Will the problems in Town Center become worse if nothing is done?
ANSWER (By Board of Health member): Probably will not become worse since local and state regulations prohibit further building on soils like this, but the situation will not get any better.

At 9:30 p.m. the hearing was adjourned; the hearing reconvened on April 29.

The hearing started with the Board of Health stating their position on the project. The Board feels the Town has two areas of public health concern: Town Center and Pequot Pond. The Town Center problem can best be solved by a sewerage system but the Ponds area needs a centralized water system more than a sewerage system. The Board recommends a pressurized collector-leach field sewerage system for Town Center.

The hearing continued for another hour, with the attendees discussing the pros and cons of the various alternatives. A consensus was then reached: the Town prefers Options A-6 and B-2. In terms of funding priorities the consensus was:

1. Provide sewerage for Town Center;
2. Provide potable water for Pequot Pond;

3. Provide sewerage for Pequot Pond.

The hearing was then adjourned.